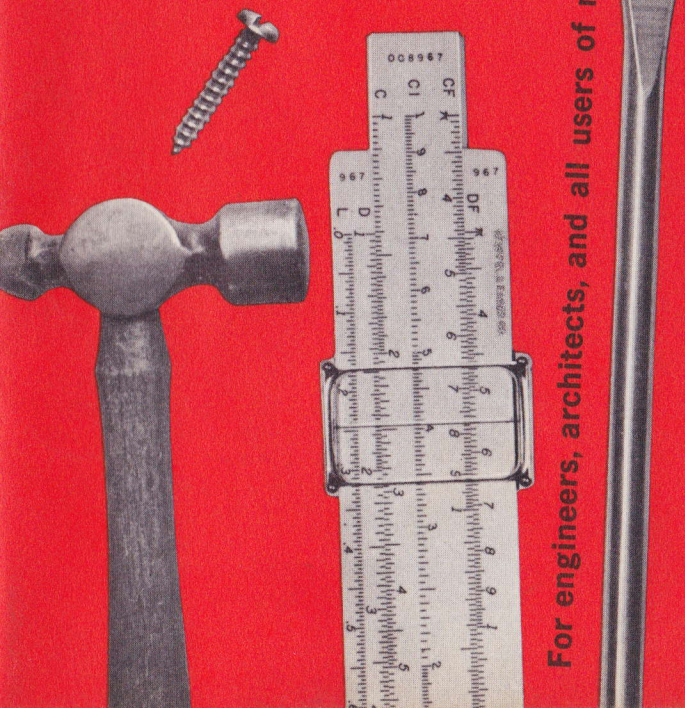
CATALOG No. 26

Anchoring and Drilling Devices
for Fastening Anything to Masonry

RAWL PRODUCTS

Masonry Anchoring Handbook®



For engineers, architects, and all users of masonry anchors

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Holding powers shown represent averages of extensive tests in good masonry materials performed under ideal conditions. A safety factor ratio should be applied to these figures.

Please Use Catalog Numbers in Ordering

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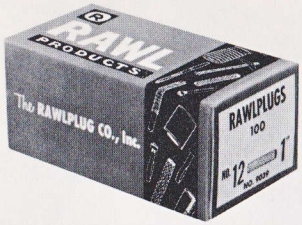
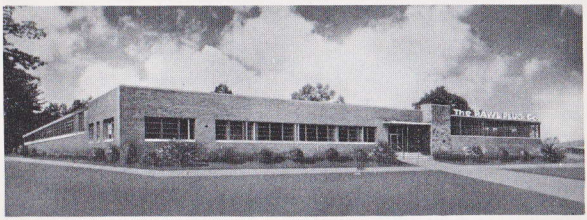


THE RAWLPLUG COMPANY, Inc.

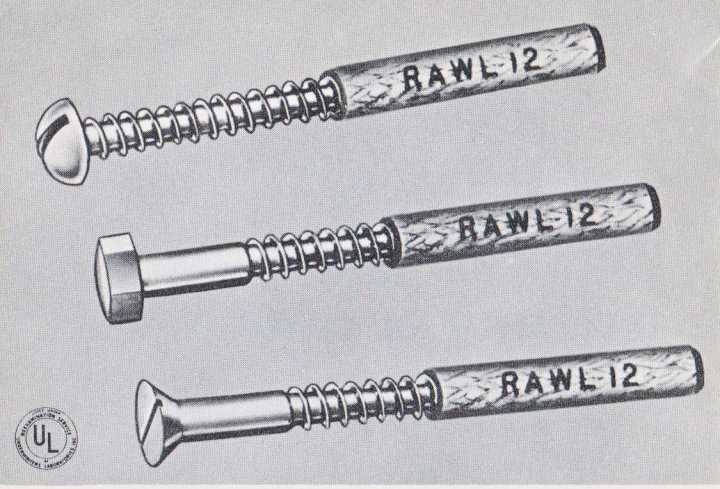
For over forty years the name "Rawl" has signified the foremost manufacturer of masonry anchors and drills for every construction, industrial and home application.



Rawl products are engineered, designed and produced in this modern plant in New Rochelle, N.Y., where new automatic machines assure products of the highest precision and quality. For your convenience these products are shipped in boxes that incorporate all the latest advances in package design and with complete instructions for their use enclosed. Rawl products are available at any of America's finest distributors and in every major city in the world.

The material in this catalog is designed to provide all users of masonry anchoring and drilling devices, architects, engineers, and specification writers with the information that they require for any application of drilling in, and anchoring to, masonry. If further information or advice is needed on a special application, write to: Engineering Dept., Rawlplug Company, Inc., 200 Petersville Rd., New Rochelle, N. Y. If you want advice on a problem immediately, see inside back cover for the location of our branch nearest you. Then consult the telephone directory for address and telephone number. The listing will appear like the following samples:

Rawlplug Atlanta Co., 295 Hayden St. N.W., JAckson 1-1897
Rawlplug Charlotte Co., 1331 So. Mint St., FRanklin 5-5012



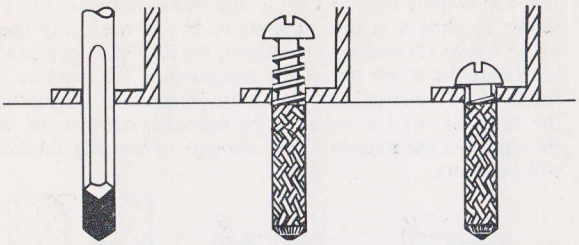
RAWLPLUGS

The Rawlplug is a masonry anchor designed for use with wood, sheet metal and lag screws. It is formed of braided jute, nature's toughest fiber, compressed into a tubular shape, and treated with chemicals and heat to give it a tough and elastic binding. A lead lining makes it possible for the screw to reproduce its own thread, and keeps the jute fibers from being cut by the screw.

Rawlplugs are made in a complete range of sizes to match every size of screw commonly available.

A few advantages of using Rawlplugs:

- Rawlplugs are the only *universal masonry anchors*—they can be used in any masonry material.
- Holding powers are far in excess of any ordinary requirements.
- Small hole required means much less time spent drilling, and lower drill cost.
- "Elastic compression" feature of Rawlplugs absorbs shock and vibration, prevents cracking of fragile or brittle masonry.
- No need for "hole-spotting" or layout of work when using Rawlplugs.
- Low initial cost.
- Screw may be removed or replaced as often as necessary without affecting the anchorage.

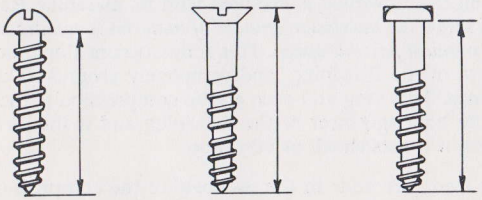


Installation of Rawlplugs is very simple—Rawldrill proper size hole, insert the Rawlplug, put fixture in place and turn screw home.

The first, and most important rule in the installation of Rawlplugs is to use the *same size* Rawldrill, Rawlplug and screw. For instance, if using a #12 screw, drill the hole with a #12 Rawldrill and use a #12 Rawlplug. This rule holds true for all except lag screws—see table on page *7* for proper drill to use with these.

The Rawlplug depends on tremendous compression for its holding power—the flexibility of the jute permits it to be forced and compressed into every irregularity in the walls of the hole, so it is absolutely necessary that Rawlplug, Rawldrill and screw sizes all be the same.

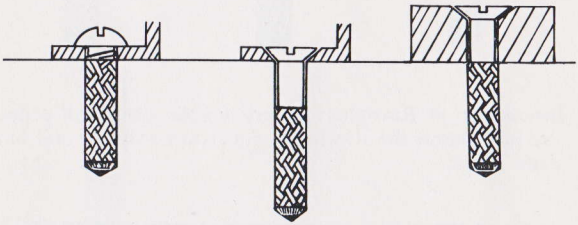
MEASURING SCREWS



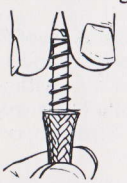
The shoulders of wood or lag screws *should not* enter the Rawlplug. Forcing the screw shoulder into the Rawlplug adds nothing whatever to holding power, and may bind or "shear" the screw—that is, turn the head off.

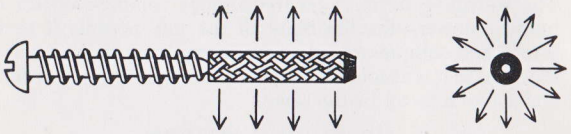
RAWLPLUGS

Use a Rawlplug only as long as the threaded portion of the screw, as shown in the illustration. If you are using sheet metal screws (threaded to the head), the Rawlplug can be the length of the screw minus the thickness of the work to be fastened. If the shoulder of your wood screw is longer than the thickness of the work to be fastened, countersink the Rawlplug in the masonry deep enough so that the shoulder will not enter.



When anchoring in hollow materials (plaster, hollow tile, sheet rock, block, etc.), flare the end of the Rawlplug by turning a few threads of the screw into the Rawlplug in your hand. Push this assembly into the drilled hole and turn the screw in a few more threads. Then remove the screw, put fixture in place and turn screw home.



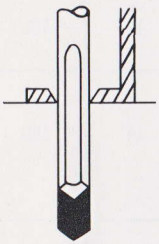


When the Rawlplug is installed with its matching Rawldrill and screw the *maximum amount of material is compressed into the smallest possible space.* This action occurs along the *entire length* of the Rawlplug, and completely around its circumference. This long and even elastic compression is the secret of the holding power of the Rawlplug and is the means by which it resists shock or vibration.

The lead core adds to the evenness of the compression and also acts as a lubricant for the entering screw, making installation faster and easier.

Holding power may generally be increased, if desired, by using a longer screw and Rawlplug.

Because the Rawlplug is nominally no larger than its corresponding fastener, *holes may be drilled right through the mounting holes in the fixture to be fastened.* This saves putting the fixture in place, "spotting" the holes to be drilled, removing the fixture and replacing it before installation is complete. With Rawlplugs, the entire anchoring job may be completed *without moving the fixture once.*



The small diameter of hole compared to holding power means less drilling time (from a hole twice the diameter of another, four times the amount of material must be removed). The initial cost of drills used is also reduced, for the same reason of the relatively small hole required.

Typical Rawlplug Applications

Due to its holding power, plus its adaptability to all materials, the Rawlplug may be used wherever a masonry anchor is required. See page 56 for a more comprehensive list of applications.

Some other interesting applications for which Rawlplugs have been used:

- *Fastening tide measuring devices to sea walls.*
- *Reconstructing extinct fossils.*
- *Hanging art masterpieces.*
- *Construction of fine furniture.*

Conduit Clamps	Bathroom Fixtures
Wire Clips	Baseboard Heating
Wire Mold	Radiators
Outlet Boxes	Sink, Basin Brackets
Lighting Fixtures	Awnings
Meter Boxes	Venetian Blinds
Fuse Boxes	Institutional Maintenance
Control Tubing	Industrial Maintenance

Home use—Pictures, Mirrors, etc.

RAWLPLUGS

For Sheet Metal Screws and Standard Wood Screws

Cat. No.	Rawlplug Size: Diam. of Screw	Rawlplug Size: Length of Rawlplug	Rawldrill Size & Diam.	Use Rawl Drill Holder & Grip No.	Packed in Boxes of
9001 9003 9005	6 x	5/8″ 3/4″ 1″	#6 (5/32″)	14	100
9009 9011 9013 9015 9017 9019	8 x	5/8″ 3/4″ 1″ 1 1/4″ 1 1/2″ 2″	#8 (11/64″)	14	100
9024 9026 9028 9030 9032	10 x	3/4″ 1″ 1 1/4″ 1 1/2″ 2″	#10 (3/16″)	14	100
9037 9039 9041 9043 9045	12 x	3/4″ 1″ 1 1/4″ 1 1/2″ 2″	#12 (1/4″)	14	100
9050 9052 9054 9056	14 x 1″ or 1/4″ lag screw	1 1/4″ 1 1/2″ 2″	#14 (9/32″)	14	100
9061 9063 9065	16 x	1″ 1 1/2″ 2″	#16 (5/16″)	20	50
9070 9072 9074	20 x 1″ or 5/16″ lag screw	1 1/2″ 2″	#20 (3/8″)	20	50
9076	22 x	2″	#20 (3/8″)	20	50

Matching Lengths of Wood Screws and Rawlplugs

Wood Screw Length	1″	1 1/4″	1 1/2″	1 3/4″	2″	2 1/2″	3″	3 1/2″
Use Rawlplug Min. Length	5/8″	3/4″	1″	1 1/4″	1 1/2″	1 1/2″	2″	2″

For Lag Screws

Cat. No.	Rawlplug Size: Diam. of Screw	Rawlplug Size: Length of Rawlplug	Rawldrill Size & Diam.	Use Rawl Drill Holder & Grip No.	Packed in Boxes of
9078	⅜ x	1½″			
9080		2″			
9082		2½″	7/16″	20	25
9084		3″			
9086	7/16 x	1½″			
9087		2″			
9088		2½″	½″	20	25
9089		3″			
9091	½ x	2″			
9092		2½″	⅝″	20	25
9093		3″			
9095	⅝ x	2½″			
9096		3″	¾″	20	25
9097		3½″			

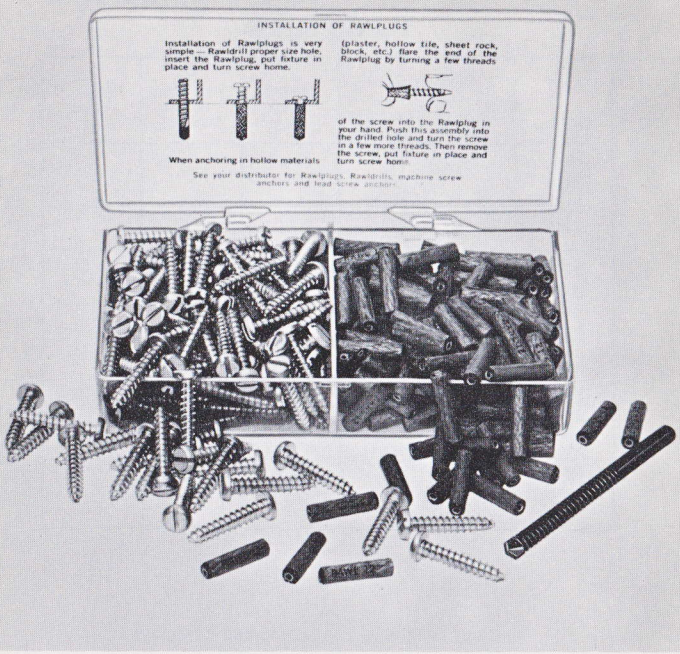
Matching Lengths of Lag Screws and Rawlplugs

Lag Screw Length	2½″	3″	3¼″	3½″	4″	4½″	5″	5½″	6″	7″
Use Rawlplug Min. Length	1½″	1½″	2″	2″	2″	2½″	2½″	3″	3″	3½″

Holding Powers of Rawlplugs

(Tests Performed by Columbia University)

Rawlplug Size	Rawlplug Length	Holding Power, Lbs. Concrete	Holding Power, Lbs. Brick	Rawlplug Size	Rawlplug Length	Holding Power, Lbs. Concrete	Holding Power, Lbs. Brick
# 6	1″	550	230	#20	2″	2830	1750
# 8	1″	885	450	⅜″	2½″	3700	2980
#10	1″	1150	535	7/16″	2″	6670	3200
#12	1½″	1525	660	½″	3″	8900	3900
#14	1½″	1590	900	⅝″	3″	12,700	6150
#16	1½″	2150	1400				



RAWL CONTRACTOR'S KIT

The Rawl Contractor's Kit is a complete masonry fastening package. Each kit contains genuine Rawlplugs, matching screws and a Rawl Spiral Carbide masonry drill—all in a handy re-usable box.

Ideal for electricians, plumbers and maintenance men, the Contractor's Kit puts the drills, anchors and screws in the proper sizes you need on the job where you need them. The kits put an end to lost time getting together the correct size of each item when needed.

Due to the excellent holding power of the Rawlplug as well as its adaptability for use in all types of masonry, a Contractor's Kit will cover any masonry anchoring application that may occur.

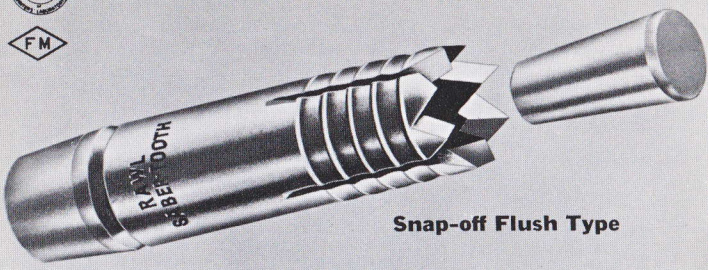
Cat. No.	Kit. No.	Contents	Packed in Boxes of
8977	R-8	100 #8 x 1″ Rawlplugs 100 #8 x 1″ Screws 1 #8 (1/64″) Carbide Drill	1
8982	R-10	100 #10 x 1″ Rawlplugs 100 #10 x 1″ Screws 1 #10 (3/16″) Carbide Drill	1
8987	R-12	100 #12 x 1″ Rawlplugs 100 #12 x 1¼″ Screws 1 #12 (¼″) Carbide Drill	1

RAWL HANDYMAN KIT

As its name implies, the Rawl Handyman Kit is a fastening outfit designed primarily for the home handyman.

Each kit contains everything necessary for fastening to masonry – #8 genuine Rawlplugs, #8 matching screws and one #8 hand masonry drill complete with holder. Complete easy-to-understand installation instructions are included in each kit.

Cat. No.	Contents	Packed in Boxes of
8901	#8 x 1″ Rawlplugs #8 x 1″ Screws #8 (1/64″) Hand Drill	1



Snap-off Flush Type

Hand Flush Type

Tie Wire Type

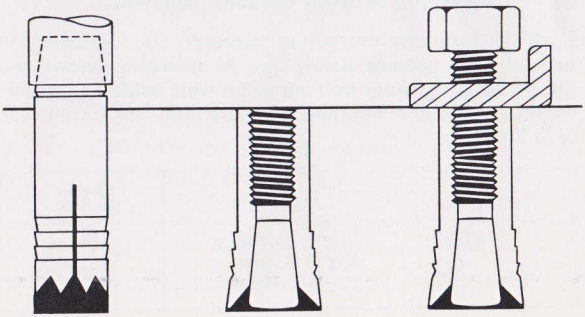
Rod Hanger Type

Stud Type

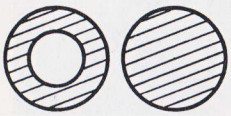
RAWL SABER-TOOTH

Self-Drilling Masonry Anchor

The Rawl Saber-Tooth is a new heavy-duty masonry anchor that drills its own hole—each anchor is its own drill.



IT'S A DRILL! This revolutionary new system for fastening to masonry is made possible chiefly by the exclusive *DURATHERM* heat-treating process which makes the "teeth" hard enough to drill the toughest masonry materials —even granite!



Drilling time and labor are reduced—each drill is a brand new, sharp one, and "core drill" design means that a much smaller area of masonry surface is being attacked, for a given hole size, than with the usual masonry drill.

IT'S AN ANCHOR! When the Saber-Tooth is driven home over its expander plug, the four expander slots permit even expansion against the wall of the hole, while *DURATHERM* hardened teeth "undercut" the drilled hole. Tapered ridges provide additional resistance to withdrawal from the hole. The heavy holding power developed is deep in the masonry, where masonry itself is strongest.

Advantages of the Saber-Tooth System for anchoring to masonry:

Drilling: A new, sharp drill for each anchor.
Avoid initial extra cost of drills.
No resharpening bother.
Faster drilling with "core drill" design.
Will drill toughest masonry materials.

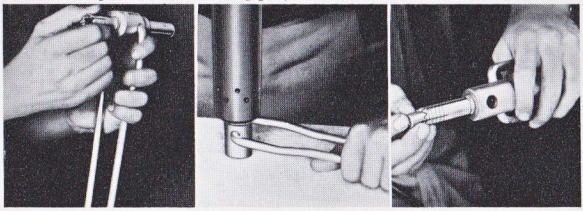
Anchoring: Very heavy holding power—ordinarily exceeds strength of bolt or masonry.
Expansion is deep in masonry, where masonry itself is strongest.
Unaffected by shock or vibration.
No misapplication—no mismatching of drill and anchor.
Fire-safe steel, rust-resistant plated.
Five styles to cover every masonry anchoring application.

Holding Powers of Rawl Saber-Tooth

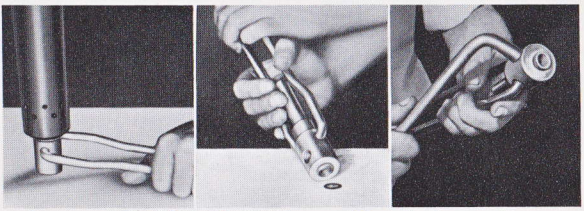
1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	7/8"
3,200	3,435	6,340	8,725	11,135	17,290	18,940

INSTALLATION INSTRUCTIONS

Snap-off Flush Type, with Power Hammer



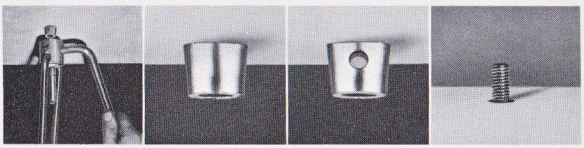
1. Insert SABER-TOOTH in Chuck. Tap assembly on masonry surface to seat SABER-TOOTH firmly.
2. Drill till SABER-TOOTH Chuck barely meets masonry surface, while rotating Chuck in half circle.
3. Clean SABER-TOOTH and hole thoroughly (SABER-TOOTH may be cleaned by running hammer momentarily). Insert expander plug.



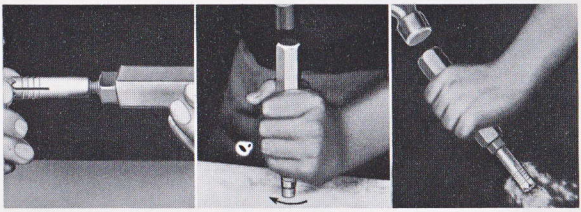
4. Re-insert SABER-TOOTH assembly in hole, run hammer *WITHOUT ROTATING CHUCK* until Chuck again meets masonry surface.
5. Remove hammer, and with sharp blow on side of Chuck handle, snap off taper.
6. Eject taper from Chuck with ejector key provided.

Rod Hanger, Tie-Wire, Stud Type

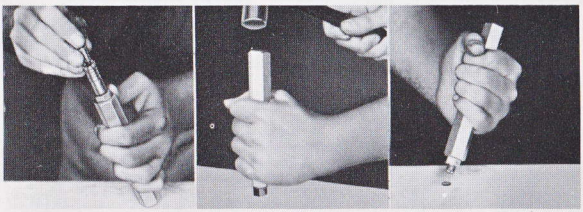
For ROD HANGER and TIE-WIRE types follow Steps 1 through 4 above. Then, using ejector key, disengage Chuck from SABER-TOOTH, allowing end to project. For STUD TYPE follow Steps 1 through 6 above, leaving threaded stud projecting from masonry.



Hand Flush Type, with Hand Hammer



1. Thread SABER-TOOTH on Hand Holder as far as it will go.
2. Using light (but sharp), quick blows drill till SABER-TOOTH is flush with masonry surface. Rotate Hand Holder in clockwise direction only.
3. Remove assembly and clean cuttings from SABER-TOOTH and hole frequently.



4. Insert expander plug and replace assembly in hole.
5. Set SABER-TOOTH by driving with hammer till hex nut meets masonry surface.
6. Unscrew Hand Holder.

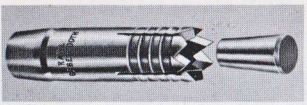
TYPICAL APPLICATIONS

SNAP-OFF FLUSH TYPE, HAND FLUSH TYPE: ceiling-hung pipe, conveyors, machinery, ornamental iron, plumbing fixtures, sheet metal ducts, any thread-in application.

ROD HANGER TYPE: pipe clamps, threaded rod, sprinklers, any application where work is not flush to masonry surface.

TIE-WIRE TYPE: acoustical ceilings, metal lath, fluorescent fixtures, all tie-wire applications.

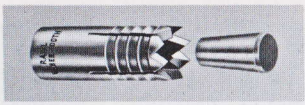
STUD TYPE: institutional seating, gym lockers and benches, office partitions, any thread-out application.



Snap-off Flush Type

Install with power hammer. For all kinds of thread-in applications.

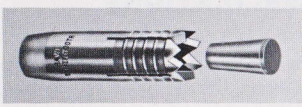
Catalog Number	Size	Outside Diameter	Depth in Masonry	Depth of Thread	Packed in Boxes of
6003	3/16"	7/16"	1"	3/8"	100
6004	1/4"	7/16"	1 1/8"	3/8"	100
6005	5/16"	15/32"	1 9/32"	3/8"	100
6006	3/8"	9/16"	1 17/32"	9/16"	50
6008	1/2"	11/16"	2 1/32"	3/4"	50
6010	5/8"	27/32"	2 15/32"	7/8"	25
6012	3/4"	1"	3 1/4"	1 3/16"	10
6014	7/8"	1 1/8"	3 11/16"	1 3/8"	10



Hand Flush Type

Install with hand hammer. For all kinds of thread-in applications.

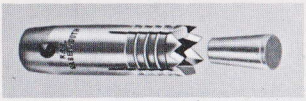
Catalog Number	Size	Outside Diameter	Depth in Masonry	Depth of Thread	Packed in Boxes of
6104	1/4"	7/16"	1 1/4"	3/8"	100
6105	5/16"	15/32"	1 7/32"	3/8"	100
6106	3/8"	9/16"	1 7/16"	7/16"	50
6108	1/2"	11/16"	1 15/16"	3/4"	50
6110	5/8"	27/32"	2 3/8"	7/8"	25
6112	3/4"	1"	3"	1 1/8"	10



Rod Hanger Type

Install with hand or power hammer. For work not flush to masonry surface.

Catalog Number	Size	Outside Diameter	Depth in Masonry	Depth of Thread	Packed in Boxes of
6206	3/8"	9/16"	1 7/16"	1 5/16"	50
6208	1/2"	11/16"	2 1/32"	1 1/4"	50
6210	5/8"	27/32"	2 13/32"	1 1/2"	25
6212	3/4"	1"	3 9/32"	1 7/8"	10

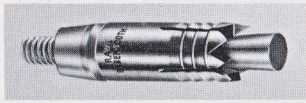


Tie Wire Type

Install with power hammer. For all tie wire applications.

Catalog Number	Diam. of Cross Hole	Outside Diameter	Depth in Masonry	Length Overall	Packed in Boxes of
6732	7/32"	15/32"	1 3/16"	1 21/32"	100

Use same SABER-TOOTH CHUCK indicated for Cat. No. 6005, SNAP-OFF FLUSH TYPE.

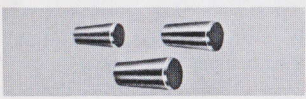


Stud Type

Install with power hammer. For all thread-out applications.

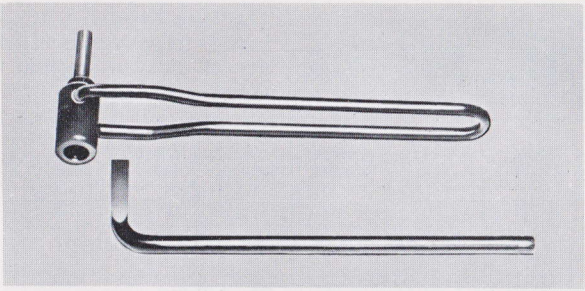
Catalog Number	Size	Outside Diameter	Depth in Masonry	Thread Length Above Surface	Packed in Boxes of
6310	10-24 x 1½"	13/32"	1"	½"	100
6320	10-24 x 2"	13/32"	1"	1"	100
6330	10-24 x 2½"	13/32"	1"	1½"	100
6340	¼-20 x 1¾"	15/32"	1⅛"	⅝"	50
6350	¼-20 x 2¼"	15/32"	1⅛"	1⅛"	50
6360	¼-20 x 2¾"	15/32"	1⅛"	1⅝"	50

For 10 x 24 sizes, use same SABER-TOOTH CHUCK indicated for Cat. No. 6004, SNAP-OFF FLUSH TYPE; for ¼ x 20 sizes, Cat. No. 6005.



Also available—extra SABER-TOOTH Expander Plugs.

Catalog Number	Size	Packed in Boxes of	Catalog Number	Size	Packed in Boxes of
6403	3/16"	100	6408	½"	100
6404	¼"	100	6410	⅝"	50
6405	5/16"	100	6412	¾"	50
6406	⅜"	100	6414	⅞"	25



Rawl Saber-Tooth Chucks

Rawl SABER-TOOTH Chucks adapt hammers of every manufacturer. There is a different chuck for each size of SABER-TOOTH, each with its own catalog number. Refer to table on page 53 for information on the ordering of Chucks.

Chuck Accessories

Each Chuck is shipped complete with handle and ejector key, but these are also available as extra parts.

Catalog Number	Description
6695	EXTRA CHUCK HANDLES
6690	EXTRA EJECTOR KEYS

SABER-TOOTH Hand Holders—for installation of Hand Flush and Rod Hanger Types with hand hammer.

Catalog Number	Size	Packed in Boxes of	Catalog Number	Size	Packed in Boxes of
6804	1/4"	1	6810	5/8"	1
6805	5/16"	1	6812	3/4"	1
6806	3/8"	1	6814	7/8"	1
6808	1/2"	1			

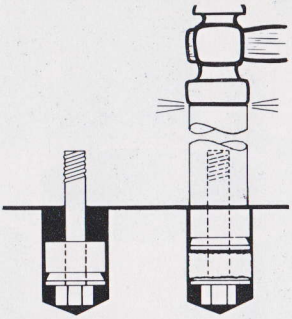
RAWL MULTI-CALKS

Heavy Duty Bolt Anchors

The Rawl Multi-Calk is a multiple-unit calking bolt anchor designed for the really big jobs of masonry anchoring—where extremely heavy holding power is the most important consideration.

When the lead sleeve is calked down around the hard cone, it wedges into all the space between the cone and the wall of the drilled hole and fills all the irregularities in the hole. As successive units are calked, they fill all the remaining space in the hole adding to the resistance to withdrawal and supporting all that portion of the bolt which is in the hole.

As the anchorage is tightened, after fixture is in place, the bolt head firmly seats itself in the cone, adding still further to the holding power. Lugs on the cone prevent it from turning as bolts or nuts are tightened.



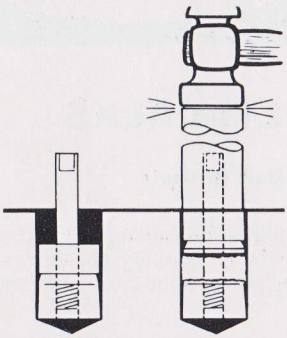
Plain Style

(Bolt Head in Hole)

1. Rawldrill hole of recommended diameter and depth (see page 20). Clean hole of dust completely. Assemble the first unit on the bolt so that hard cone will enter hole first, and insert assembly into hole as far as possible.

2. Calk with Multi-Calk setting tool made for the size you are using. Insert the second unit and calk. *Calk each unit individually.* Repeat for each successive unit to be used.

3. Put fixture in place, turn on nut, and tighten.



Threaded Style

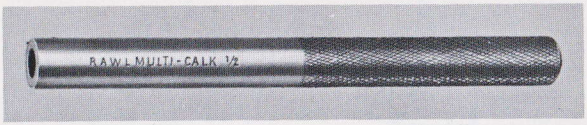
(Bolt Head Out of Hole)

1. Rawldrill hole of recommended diameter and depth (see page 21). Clean hole of dust as completely as possible. Assemble the threaded unit onto the special threaded pilot and insert assembly in hole as far as possible, cone first.

2. Slip proper Multi-Calk setting tool over pilot and calk. Slip second unit (unthreaded) over pilot into hole and calk. *Calk each unit individually.* Repeat for each successive unit to be used.

3. Remove pilot, put fixture in place, tighten bolt.

Rawl Multi-Calk Accessories



Rawl Setting Tools are especially made to complement Rawl Multi-Calks. They give complete calking, with no sticking.

Catalog No.	9106	9116	9121	9126	9131	9136	9141
Size	¼″	⅜″	½″	⅝″	¾″	⅞″	1″

Rawl Multi-Calk Pilots prevent lead from filling bolt hole as Threaded Style is calked.

Catalog No.	9156	9166	9171	9176	9181	9186	9191
Size	¼″	⅜″	½″	⅝″	¾″	⅞″	1″

General Notes:

1. In calking, make the first hammer blow as hard as possible —this is the one that will do the most work.

2. Match the weight of the hammer to the job—don't use a hammer that is too light to achieve complete calking of the larger sizes.

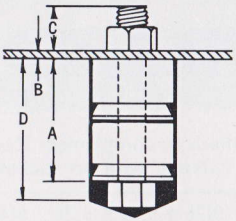
3. Multiple units of Multi-Calks are required in order to completely develop the strength of the bolt used. Never use less than two units. In weak masonry, or where heavy overloads may be expected, use three or more units. In order to develop an anchorage equal to the strength of the bolts, use the number of units recommended on pages 20 and 21.

4. For all sizes up to and including one-half inch, use square-head bolts with Plain Style Multi-Calks. For sizes above one-half inch, use hexagon-head bolts where the drilled hole is too small to receive a square-head bolt. The corners of a square-head bolt may be ground off to fit the drilled hole.

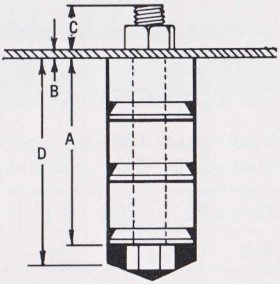
RAWL MULTI-CALKS

Plain Style

TWO UNIT INSTALLATION



THREE UNIT INSTALLATION



A=Bolt length in hole. B=Work thickness. C=Height of nut + extra threads.
D=Depth of hole. A+B+C=Length of bolt to use.

To quickly determine length of bolt to use, add work thickness to dimension shown in column headed "*Bolt Length Minus Work Thickness (Dimension A + C)*"

Catalog Number	For Bolt Diameter	Rawldrill Diameter	Minimum Hole Depth, 2 Units (Dimension D)	Minimum Hole Depth, 3 Units (Dimension D)	Bolt Length Minus Work Thickness, 2 Units (Dimension A+C)	Bolt Length Minus Work Thickness, 3 Units (Dimension A+C)	Add to Bolt Length and Hole Depth for Each Additional Unit	Packed in Boxes of (Single Units)
			2 units	3 units	2 units	3 units		
9105	1/4"	1/2"	1 1/8"		1 1/4"		1/2"	100
9115	3/8"	3/4"	1 1/2"		1 3/4"		1/2"	50
9120	1/2"	1"	1 3/4"	2 3/8"	2"	2 5/8"	5/8"	50
9125	5/8"	1 1/8"	*	2 5/8"	*	3"	5/8"	50
9130	3/4"	1 3/8"	*	3"	*	3 1/2"	3/4"	25
9135	7/8"	1 1/2"	*	3 1/2"	*	4 1/8"	7/8"	25
9140	1"	1 5/8"	*	3 7/8"	*	4 1/2"	1"	25
9143	1 1/8"	2"	*	6"	*	7 5/8"	2"	25
9145	1 1/4"	2 1/8"	*	6 1/4"	*	8 5/8"	2 1/4"	25
9147	1 1/2"	2 3/8"	*	7 1/4"	*	9 1/4"	2 3/8"	25
9149	1 3/4"	3 1/2"	*	12"	*	14 1/8"	3 3/8"	25

*Use of three units in these diameters is recommended.

Both styles available on order with retaining rings, for additional holding power.

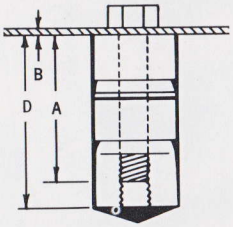
Holding Powers of Rawl Multi-Calks

1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
2200	5500	8000	*12,000	*18,000	*24,000	*28,000

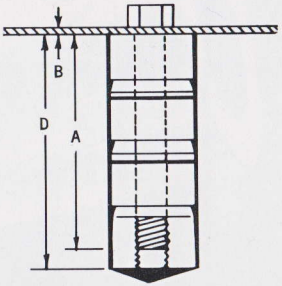
*Three Units

Threaded Style

TWO UNIT INSTALLATION



THREE UNIT INSTALLATION



A = Bolt length in hole.
B = Work thickness.

D = Depth of hole.
A + B = Length of bolt to use.

To quickly determine length of bolt to use, add work thickness to dimension shown in column headed "*Bolt Length Minus Work Thickness (Dimension A)*."

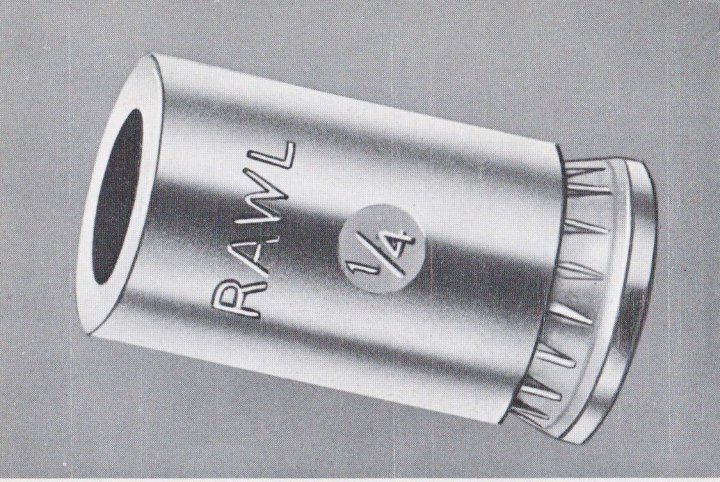
Catalog Number	For Bolt Diameter	Rawldrill Diameter	Minimum Hole Depth, 2 Units (Dimension D)	Minimum Hole Depth, 3 Units (Dimension D)	Bolt Length Minus Work Thickness, 2 Units (Dimension A)	Bolt Length Minus Work Thickness, 3 Units (Dimension A)	Add to Bolt Length and Hole Depth for Each Additional Unit	Packed in Boxes of (Single Units)
			2 units	3 units	2 units	3 units		
9155	1/4"	1/2"	1"		3/4"		1/2"	100
9165	3/8"	3/4"	1 1/2"		1"		1/2"	50
9170	1/2"	1"	1 3/4"	2 1/4"	1 1/8"	1 3/4"	5/8"	50
9175	5/8"	1 1/8"	*	2 1/2"	*	1 7/8"	5/8"	50
9180	3/4"	1 3/8"	*	3 1/8"	*	2 1/4"	3/4"	25
9185	7/8"	1 1/2"	*	3 5/8"	*	2 5/8"	7/8"	25
9190	1"	1 5/8"	*	3 3/4"	*	2 3/4"	1"	25
9193	1 1/8"	2"	*	6"	*	5 1/2"	2"	25
9195	1 1/4"	2 1/8"	*	6 1/4"	*	6 1/4"	2 1/4"	25
9197	1 1/2"	2 3/8"	*	7 1/4"	*	6 1/2"	2 3/8"	25
9199	1 3/4"	3 1/2"	*	12"	*	11"	3 3/8"	25

*Use of three units in these diameters is recommended.

Both styles available on order with retaining rings, for additional holding power.

Packaging Note

Rawl Multi-Calks are packaged in single, same-style units. A box of 3/8" Threaded Style contains 50 threaded units only. For 50-two unit fastenings, one box of 3/8" Plain and one box of 3/8" threaded is required.

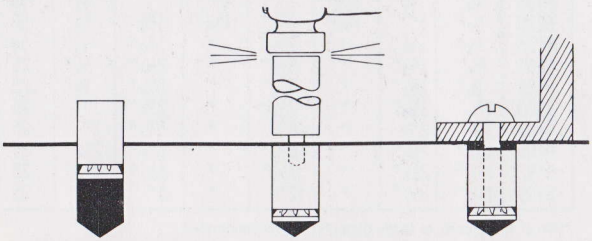


RAWL CALK-INS

Machine Screw Anchors

The Rawl Calk-In is a machine screw anchor with a calking sleeve precision-cast of RAWLOY—the lead alloy specially developed for masonry anchors. It is soft enough for easy, *complete* calking, hard enough for secure holding power.

The hard alloy cone will not rust or discolor masonry, and is chamfered at the top for easy screw starting. A sharp collar prevents it from being drawn up through the lead sleeve when heavy overloads are applied.

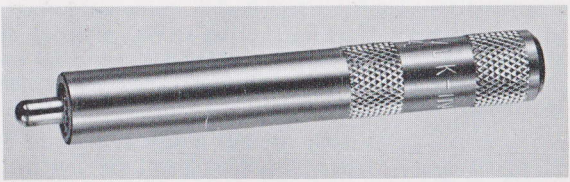


1. Rawldrill recommended size hole. In weak or soft masonry, countersink the Calk-In below the surface slightly.
2. Drop Calk-In into hole, *nut down*, and calk.
3. Put fixture in place and tighten machine screw. Best length for machine screw is one which will engage about two-thirds of the threads in the cone, after the fixture is in place.

Cat. No.	Size	Rawldrill Diam.	Minimum Depth	Packed in Boxes of
9200	6 x 32	5/16"	1/2"	100
9205	8 x 32	5/16"	1/2"	100
9209	10 x 24	3/8"	5/8"	50
9210	10 x 24	3/8"	5/8"	100
9215	12 x 24	1/2"	7/8"	100
9219	1/4 x 20	1/2"	7/8"	50
9220	1/4 x 20	1/2"	7/8"	100
9225	5/16 x 18	5/8"	1"	50
9230	3/8 x 16	3/4"	1 1/4"	50
9240	1/2 x 13	7/8"	1 1/2"	50
9245	5/8 x 11	1 1/8"	2"	50
9250	3/4 x 10	1 1/4"	2 1/4"	25

Holding Powers of Rawl Calk-Ins

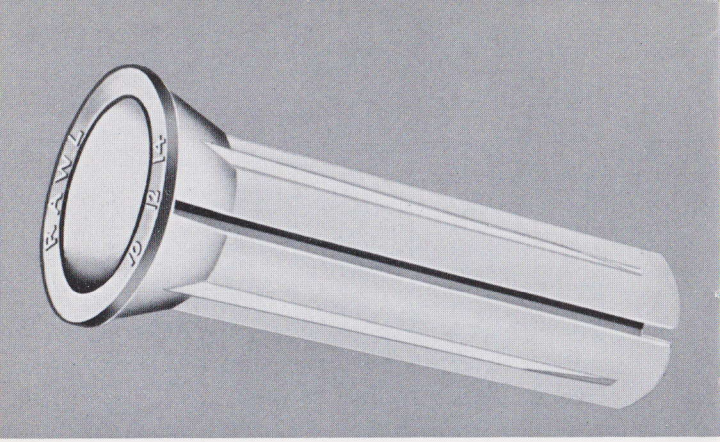
Size of Calk-In	Holding Power (Lbs.) 1:2:4 Concrete	Size of Calk-In	Holding Power (Lbs.) 1:2:4 Concrete	Size of Calk-In	Holding Power (Lbs.) 1:2:4 Concrete	Size of Calk-In	Holding Power (Lbs.) 1:2:4 Concrete
6 x 32	625	12 x 24	1750	3/8 x 16	3670	5/8 x 11	7800
8 x 32	950	1/4 x 20	2275	1/2 x 13	7200	3/4 x 10	8300
10 x 24	1100	5/16 x 18	2850				



A free calking tool is included in every box of Rawl Calk-Ins. Each calking tool is designed to complement its corresponding size of Calk-In. It will give complete calking, with no sticking of the tool in the lead sleeve.

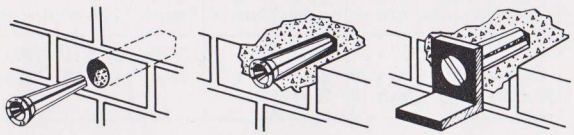
Extra Rawl Calk-In Tools

Cat. No.	Size	Cat. No.	Size	Cat. No.	Size	Cat. No.	Size
9201	6 x 32	9216	12 x 24	9231	3/8 x 16	9246	5/8 x 11
9206	8 x 32	9221	1/4 x 20	9241	1/2 x 13	9251	3/4 x 10
9211	10 x 24	9226	5/16 x 18				



RAWL SCRU-LEADS

Lead Screw Anchors



The Rawl Scru-Lead is a fast, flexible screw anchor meant for use with wood, sheet metal or lag screws. Although this type of anchor will not yield the holding power, size for size, that a Rawlplug will, it is an old standby preferred by many for standard installations.

Certain features engineered into the design of the Rawl Scru-Lead give it the most holding power possible with a lead screw anchor. The quartered design permits complete circumferential expansion, while a flared collar simplifies screw-starting.

A lip on the collar of the Scru-Lead permits its use in hollow masonry without the possibility of losing the anchor through the drilled hole.

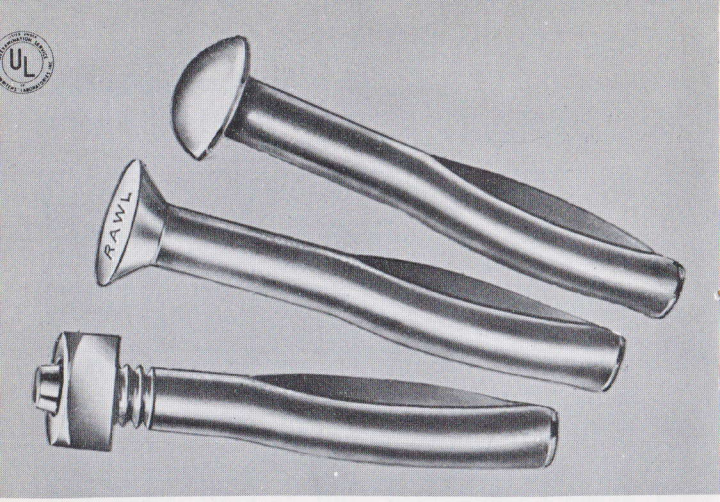
The Rawl Scru-Lead is composed entirely of RAWLOY, the exclusive Rawl alloy of lead specially developed for masonry anchors. RAWLOY is soft enough for easy installation and complete expansion, and hard enough to give sure, secure holding power.

To get length of sheet metal screw to use, add thickness of work to be fastened to length of Rawl Scru-Lead.

Cat. No.	Screw Size & Anchor Length	Use Lengths of Wood Screws	Rawl-drill Size & Diam.	Use Rawl Drill Holder & Grip No.	Packed in Boxes of
9410	6-8 x ¾"	1"–1¼"	#12 (¼")	14	25
9415	6-8 x 1"	1"–1½"	#12 (¼")	14	25
9420	6-8 x 1½"	1½"–2½"	#12 (¼")	14	25
9430	10-12-14 x 1" or ¼" lag screw	1"–1½"	#16 (5/16")	20	25
9440	10-12-14 x 1½"	1½"–2½"	#16 (5/16")	20	25
9460	16-18 x 1½"	1½"–2½"	#20 (⅜")	20	25
9470	20-22-24 x 1¾" or 5/16" lag screw	2"–3½"	7/16"	20	25

Holding Powers of Rawl Scru-Leads

Size of Scru-Lead	Holding Power in Concrete (Lbs.)	Size of Scru-Lead	Holding Power in Concrete (Lbs.)
#8 x ¾"	200	#12 x 1½"	900
#8 x 1"	300	#18 x 1½"	1300
#8 x 1½"	400	#20 x 1¾"	1600
#12 x 1"	700		

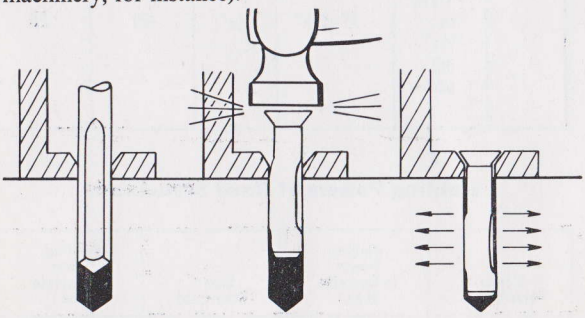


RAWL-DRIVES

One-Piece Expansion Bolts

The Rawl-Drive is one of the most unique masonry anchoring devices ever produced. It is the only true one-piece *expansion bolt.*

The Rawl-Drive is made in three head styles: Round, Countersunk and Stud-Type. The Stud-Type is meant for use in applications where the fixture might be moved (anchoring machinery, for instance).



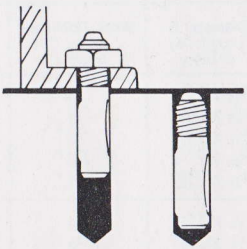
1. Rawldrill a hole in the masonry the nominal diameter of the Rawl-Drive to be used and to recommended depth (see table, pps. 28, 29)—drill right through the fixture hole—no hole-spotting or positioning required. Rawl-Drive *must not* touch bottom of hole—drill as deep as you like, blow dust out of hole.

2. Insert Rawl-Drive, (leave nut on Stud-Type) and drive with a hammer, just as you would a nail. For Round or Countersunk Drives, the anchoring job is now complete.

3. If Stud Drives are used, tighten nut slightly with a wrench. Hardness of the steel used in Rawl-Drives prevents damage to threads or nut when driving.

The Rawl-Drive is meant for use in hard masonry only—concrete, cement, stone, extra-hard brick, etc. For softer materials than these the Rawlplug is recommended.

A very tough, high-grade steel "with a memory" is used in the manufacture of the Rawl-Drive. It is given two heat treatments, for great tensile strength and hardness, and is sheared and pre-expanded by an exclusive Rawl process. When driven into the proper diameter hole in hard masonry the two sheared and pre-expanded halves of the Drive are compressed by the wall of the hole, and will forever try to regain their original bulged shape, thus exerting a tremendous force on the sides of the hole.



Resistance to withdrawal is so great that it is advisable to use the Stud-Drive in any case where the fixture might be moved at some time. If desired, the hole for the Stud-Drive may be drilled as deep as its overall length. Then, should the fixture be moved, the Drive may be buried by sending it all the way home.

The Rawl-Drive:

- cannot be misapplied . . . it is one piece . . . no screw or bolt necessary . . . requires a very small drilled hole compared to holding power developed . . . less drilling time, smaller drill cost, no hole-spotting.
- develops tremendous holding power . . . the tensile strength of the Rawl-Drive is several times that of ordinary bolts . . . the hardness and toughness of the Drive makes it excellent for vibration problems.
- is furnished in a rust-resisting plated finish . . . special finishes may be supplied on special order in large quantities.

Typical Rawl-Drive Applications

Door Bucks	Carpet Tacking Strips
Air Conditioning Ducts	Furring Strips
Wood Floors over Concrete	Metal Lath
Machinery	Church Pews
Acoustical Ceilings	Institutional Seating

RAWL-DRIVES

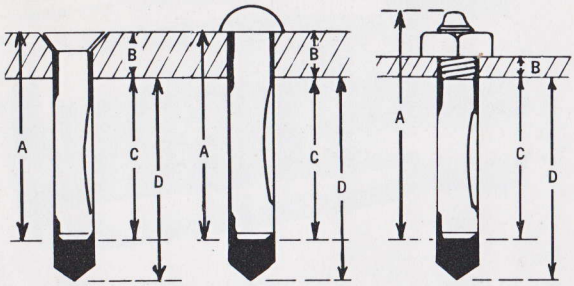
To determine proper length of Rawl-Drive to use, select the thickness of your work from table. Rawl-Drive length will appear in fourth column on same line. Be sure to add thickness of soft surface material (plaster, linoleum, etc.) to thickness of work to be fastened.

If exact thickness of your work is not shown in table, use nearest longer Drive, and drill hole deeper so that the Rawl-Drive will not touch bottom.

If shimming is necessary, add metal washers between work and masonry.

All of the sheared portion of the Rawl-Drive must be embedded in the masonry (recommended hole depth allows 1/4" for dust clearance).

Catalog Numbers Available Head Styles			Diameter & Length (A) of Drive	Work Thickness (Rd. or CSK Head) (B)	Work Thickn (Stud Typ (B)
Round	Countersunk	Stud			
3031	3032		3/16 x 1"	1/4"	
3061	3062		3/16 x 1 1/4"	1/2"	
3091	3092		3/16 x 1 1/2"	3/4"	
	3122		3/16 x 2"	1 1/4"	
	3152		3/16 x 2 1/2"	1 3/4"	
3211	3212		1/4 x 1 1/4"	1/4	
3241	3242	3243	1/4 x 1 1/2"	1/4"	3/16"
3271	3272	3273	1/4 x 2"	3/4"	7/16"
3301	3302		1/4 x 2 1/2"	1 1/4"	
	3332		1/4 x 3"	1 3/4"	
	3362		1/4 x 3 1/2"	2 1/4"	
	3392		1/4 x 4"	2 3/4"	
	3422		1/4 x 4 1/2"	3 1/4"	
3451			5/16 x 1 1/2"	1/4"	
3481	3482		5/16 x 2"	1/2"	
3601			3/8 x 2"	1/2"	
3631	3632	3633	3/8 x 2 1/2"	3/4"	1/4"
		3663	3/8 x 3"		3/4"
3691	3692	3693	3/8 x 3 1/2"	1 3/4"	1 1/4"
		3723	3/8 x 6"		3 3/4"
3781			1/2 x 3"	1/2"	
		3813	1/2 x 3 1/2"	1"	1/4"
3841	3842	3843	1/2 x 4"	1 1/2"	3/4"
		3873	1/2 x 6"		3"

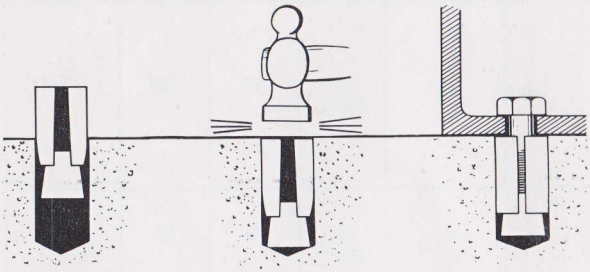


s	Portion of Drive To Embed (C)	Minimum Depth of Hole (D)	Rawldrill Size	Use Drill Holder & Grip No.	Packed in Boxes of	Holding Power, lbs. Concrete
	¾″	1″	#10 (3/16″)	14	100	1,200
	1″	1¼″	#12 (¼″)	14	100	2,375
	1½″	1¾″	#16 (5/16″)	20	50	4,000
	1¾″	2″	#20 (⅜″)	20	25	6,150
	2 7/16″	2⅝″	½″	20	25	12,700

RAWL HAMMER-SETS

Machine Bolt Anchors

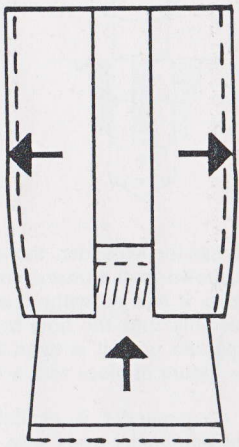
The Rawl Hammer-Set is a machine bolt anchor of an advanced design which gives it characteristically heavy holding power and great flexibility.



1. Rawldrill recommended size hole (page 33).
2. Drop Hammer-Set, *nut down*, into hole—it will drop about halfway in.
3. Hammer it flush to the surface of the masonry—no calking tool required.
4. Put fixture in place, turn home machine bolt, and tighten hard with a wrench.

The Rawl Hammer-Set gains its secure holding power by means of the perfect radial expansion of the hard alloy sleeve. This expansion occurs entirely around its circumference, and all along its length.

As the machine bolt is tightened the threaded cone is drawn up through the sleeve. Precision complementary tapers of the two parts expand the sleeve against the wall of the hole with great force. No lead is used, so there is no "creep" or "flow" of the material in the anchor.



Hammer-Sets require a smaller diameter and considerably shallower hole than older styles of machine bolt shields (less drilling time and cost), and for this reason are often used to avoid striking buried conduit or reinforcing bars in concrete.

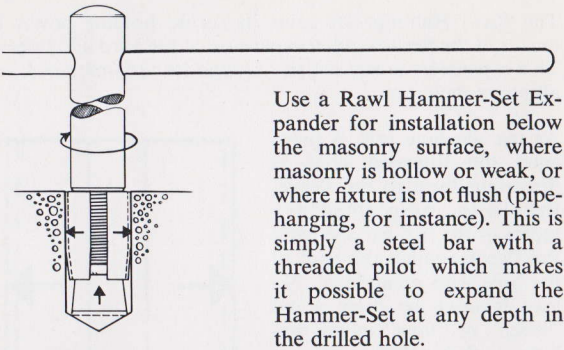
As a result of their design, Rawl Hammer-Sets are capable of providing heavy holding power in hollow materials—cement, concrete and firm cinder blocks. The "no-calking" feature means that the Hammer-Set can't be driven right through hollow masonry and lost.

Because expansion is virtually unlimited, Hammer-Sets are an excellent anchor for use in "problem" masonry (cindercrete, etc.) or inaccurately drilled holes.

Some of the advantages of Rawl Hammer-Sets:

- *Will hold rigidly, irrespective of considerable tolerance in diameter of hole drilled.*
- *No calking tool required—hammer is all that is needed.*
- *Has one slot for radial adjustment, thus on expanding the Hammer-Set maintains a perfect circumference.*
- *Requires smaller hole than old-style machine bolt anchors.*
- *May be used at any depth in masonry, or in hollow masonry.*

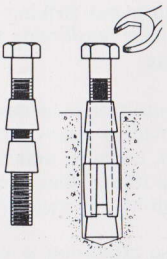
RAWL HAMMER-SETS



Use a Rawl Hammer-Set Expander for installation below the masonry surface, where masonry is hollow or weak, or where fixture is not flush (pipe-hanging, for instance). This is simply a steel bar with a threaded pilot which makes it possible to expand the Hammer-Set at any depth in the drilled hole.

To use the expander, thread the Hammer-Set onto the pilot as shown in the illustration. When it has been threaded as far as it will go without exerting force, hammer the entire assembly into the hole to the desired depth and turn the expander until it is tight. Remove the expander and fasten the fixture in place with a bolt.

If no expander is available, you can make your own by assembling two cones from Hammer-Sets on a bolt and tightening one against the other, thus locking them against movement. Thread the Hammer-Set onto this assembly, hammer into the hole to the depth desired and tighten with a wrench.



Holding is accomplished entirely around the circumference of the Hammer-Set and along the full length of the sleeve—not just the back end as in the case of wedge-type anchors.

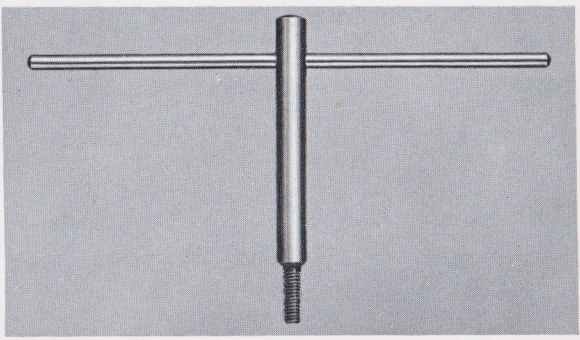
Typical Hammer-Set Applications

Sprinkler Systems	Machines
Office Partitions	Fence Construction
Window Frames	Pipe Hanging
Ornamental Iron	Radiators
Conveyors	Signs

Cat. No.	Hammer-Set Size	Rawldrill Diameter	Minimum Depth Hole	Packed in Boxes of
9310	3/16"	3/8"	7/8"	100
9320	1/4"	3/8"	7/8"	100
9330	5/16"	5/8"	1 3/8"	100
9340	3/8"	5/8"	1 3/8"	100
9350	1/2"	3/4"	1 3/4"	50
9360	5/8"	1"	2 1/8"	50

Holding Powers of Rawl Hammer-Sets

Hammer-Set size	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"
Holding Power, Lbs., 1:2:4 Concrete	1150	2375	3100	5700	8700	10000



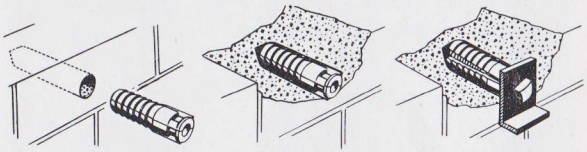
Hammer-Set Pre-Expanders are employed where unusual conditions preclude normal installation (Pipe hanging, for instance).

Cat. No.	Size	Cat. No.	Size
9311	3/16"	9341	3/8"
9321	1/4"	9351	1/2"
9331	5/16"	9361	5/8"

RAWL LAG-SHIELDS

Lag Screw Shields

The Rawl Lag-Shield is a completely rustproof lag screw shield, precision-cast of durable alloy. The design of the horizontal fins prevents the Lag-Shield from turning in the hole as the lag screw is tightened. Tapered annular rings have tremendous biting power and resistance to withdrawal from the drilled hole.



A common use for Lag-Shields is in anchoring to brick masonry outside, where it would be a disadvantage to permanently mar the masonry. For this application, the hole should be drilled into the mortar joint between two bricks and the Lag-Shield installed so that its two halves will expand against the bricks.

In hard masonry the short Lag-Shields may be used to minimize drilling time and effort. In soft or weak masonry, however, the long sizes should be used in order to develop the full strength of the masonry.

Short Style

Cat. No.	Size	Rawldrill Diam.	Length of Short	Packed in Boxes of
1051	1/4"	1/2"	1"	50
1101	5/16"	1/2"	1 1/4"	50
1151	3/8"	5/8"	1 3/4"	50
1201	1/2"	3/4"	2"	50
1251	5/8"	7/8"	2"	25
1301	3/4"	1"	2"	25

Long Style

Cat. No.	Size	Rawldrill Diam.	Length of Long	Packed in Boxes of
1055	1/4"	1/2"	1 1/2"	50
1105	5/16"	1/2"	1 3/4"	50
1155	3/8"	5/8"	2 1/2"	50
1205	1/2"	3/4"	3"	50
1255	5/8"	7/8"	3 1/2"	25
1305	3/4"	1"	3 1/2"	25

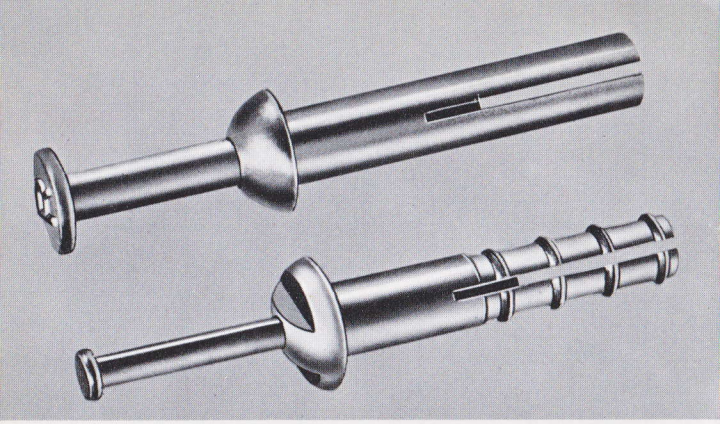
Holding Powers of Rawl Lag-Shields

Short Style

Size of Lag-Shield	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
Holding Power (Lbs., Concrete)	450	800	1200	2000	2500	3000

Long Style

Size of Lag-Shield	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
Holding Power (Lbs., Concrete)	600	1200	2000	3000	3500	4000



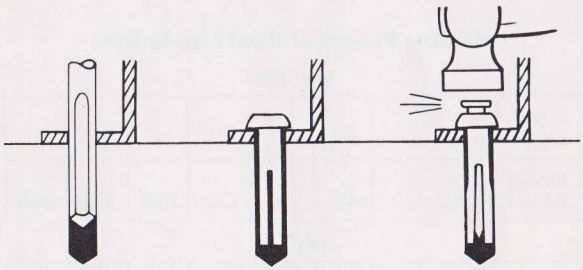
RAWL NAILIN ANCHORS

Nail Drive Anchors

The Rawl Nailin Anchor is a fast, easy-to-use expansion anchor available in two types: Aluminum or Steel. It is made for light applications—for heavy holding, the use of the Rawl-Drive is recommended.

The Nailin Anchor features simple installation. It requires a small hole, which means less drilling and lower drill cost. Once the nail is driven home, the fixture is locked in place, leaving it unaffected by vibration.

The expansion occurs deep in the masonry where the material is the strongest. Holding power is developed over the entire embedded portion of the anchor as the nail is driven home.

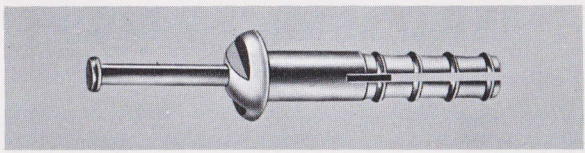


1. Rawldrill recommended size hole.
2. Put fixture in place and insert Nailin.
3. Hammer nail home.

Aluminum

Cat. No.	Size	Rawldrill Size & Diam.	Pkd. in Boxes of	Use Rawl Drill Holder and Grip No.
2002	3/16x7/8"	#10(3/16")	100	14
2008	1/4x1"	#12 (1/4")	100	14
2009	1/4x1 1/4"	#12 (1/4")	100	14

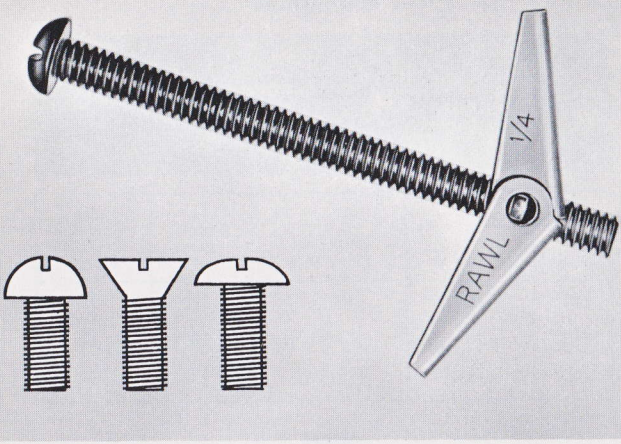
Steel



Cat. No.	Size	Rawldrill Size & Diam.	Pkd. in Boxes of	Use Rawl Drill Holder and Grip No.
2607	1/4x1"	#12 (1/4")	100	14
2610	1/4x1 1/4"	#12 (1/4")	100	14
2613	1/4x1 1/2"	#12 (1/4")	100	14

Holding Powers of Rawl Nailin Anchors

Aluminum			Steel		
Size	Length	Holding Power (lbs.) Concrete	Size	Length	Holding Power (lbs.) Concrete
3/16"	7/8"	300	1/4"	1"	1125
1/4"	1"	600	1/4"	1 1/4"	1200
1/4"	1 1/4"	700	1/4"	1 1/2"	1310

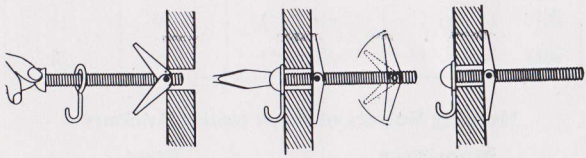


RAWL SPRING-WINGS

Toggle Bolts

Rawl Spring-Wings are toggle bolts with *positive* automatic spring action wings for anchoring to hollow masonry—they never fail to open.

Spring-Wings are plated with bright zinc by an electro-galvanizing process. They are rustproof, and will not discolor the masonry in which they're used.



Note that when installation is complete, the wings form a perfect ninety degree angle with the masonry. The entire length of the wings is supported by the masonry, unlike types in which the wings rest on two points only.

This support distributes the stress evenly, and makes impossible the loosening of the fixture under vibration.

Cat. Nos. Head Styles			Diameter & Length of Bolt	Rawl-drill Diam.	Use Rawldrill Holder & Grip No.	Packed in Boxes of
Round	Flat	Mush-room				
4021 4031 4041	4022 4032 4042	4023 4033 4043	1/8 x 2″ x 3″ x 4″	3/8″	20	50
4121 4131 4141 4151 4161	4122 4132 4142 4152 4162	 4133 4143	3/16 x 2″ x 3″ x 4″ x 5″ x 6″	1/2″	20	50
4231 4241 4251 4261	4232 4242 4252 4262	4233 4243	1/4 x 3″ x 4″ x 5″ x 6″	5/8″	20	50
4331 4341 4351 4361	4332 4342 4352 4362		5/16 x 3″ x 4″ x 5″ x 6″	7/8″	20	25
4431 4441 4451 4461	4432 4442 4452 4462		3/8 x 3″ x 4″ x 5″ x 6″	7/8″	20	25
4541 4551 4561			1/2 x 4″ x 5″ x 6″	1 1/4″		25

Holding Powers of Rawl Spring-Wings

Spring-Wing Size	1/8″	3/16″	1/4″	5/16″	3/8″	1/2″
Holding Power (Lbs.)	120	200	650	800	1000	1300

Toggle Wings Only

Catalog No.	4000	4020	4220	4330	4430	4540
Size	1/8″	3/16″	1/4″	5/16″	3/8″	1/2″

BOLTS ONLY also available in all sizes.

RAWLDRILLS

Machined percussion masonry drills for hand or power drilling. Diameters #6 ($\frac{5}{32}$″) to ¾″. Straight or twist flutes.

Forged percussion masonry drills for use with power hammers. Diameters ⅜″ to 1⅝″.

Forged percussion masonry drills for hand drilling. Diameters ⅜″ to 1⅝″.

Carbide-tipped masonry bits for use with rotary drills. Either fast or deep-flute spiral; diameters ⅛″ to 1½″.

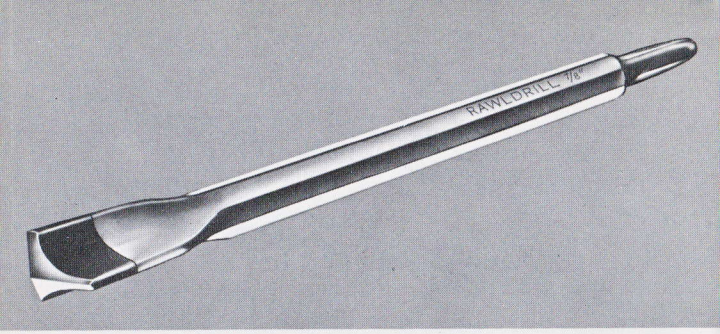
All accessories for masonry drilling—holders, hand grips, chucks, etc.

Machined (M/T) and Twist type (R/T)

For Hand Drilling or Power Hammers

M/T and R/T Rawldrills are accurately machined to size from solid bars of the highest grade tool steel. These drills, the most advanced masonry drills available, are designed for use with Rawl Drill Holders, or with Rawl Chucks in power hammers. See page 48 for description of Rawldrill Tapers and page 49 for information on Rawl Chucks.

Catalog Number M/T	Catalog Number R/T	Rawldrill Size	Nominal Diameter	Actual Diameter Inches	Drilling Depth	Length Overall	Use Drill Holder & Grip No.
8106	8156	# 6	5/32″	.148	1″	2¾″	14
8108	8158	# 8	11/64″	.178	1⅝″	3¼″	14
8110	8160	#10	3/16″	.202	1⅝″	3¼″	14
8111		#10	3/16″	.202	3¾″	5½″	14
8112	8162	#12	¼″	.251	2″	3¾″	14
8113		#12	¼″	.251	4½″	6¼″	14
8114	8164	#14	9/32″	.280	2¼″	3¾″	14
8116	8166	#16	5/16″	.314	2⅜″	4¼″	20
8120	8170	#20	⅜″	.375	3⅛″	5⅛″	20
8124	8174	7/16″	7/16″	.470	3⅛″	5¼″	20
	8177	½″	½″	.542	3⅝″	5½″	20
	8180	⅝″	⅝″	.658	4″	6″	20
	8183	¾″	¾″	.783	4″	6″	20



Forged Taper Shank (T/S)

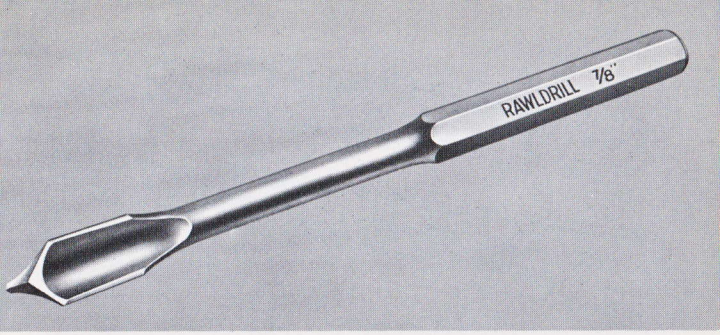
For Power Hammers

Rawl Taper Shank percussion masonry drills are forged from the highest quality tool steel, ground to size, and then accurately hardened and tempered. These drills are designed for use with power hammers, and can be adapted to any manufacturer's hammer with a Rawl Chuck with the proper "taper". See page 48 for description of Drill Tapers and page 49 for list of Rawl Chucks.

AVAILABILITY INDICATED BY CATALOG NUMBER

Diameter	WITH NO. 20 RAWLDRILL TAPER		WITH NO. 5/8 RAWLDRILL TAPER	
	6" Length Overall	12" Length Overall	6" Length Overall	12" Length Overall
3/8"	8300		8200	
1/2"	8306	8308	8208	8210
5/8"	8312	8314	8214	8216
3/4"	8320	8322	8222	8224
7/8"	8326	8328	8228	8230
1"			8232	8234
1 1/8"			8236	8238
1 1/4"			8240	8242
1 3/8"				8244
1 1/2"				8246
1 5/8"				8248

Note: Maximum drilling depths of 6" and 12" lengths are 4" and 10" respectively.
18" and 24" lengths also available.



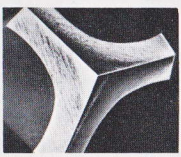
Forged Standard Type (S/T)

For Hand Drilling

Standard Type Rawldrills, accurately forged, ground, tempered and hardened, are designed for hand drilling in masonry. The enlarged handle eliminates shock to the hand and makes hand drilling more comfortable.

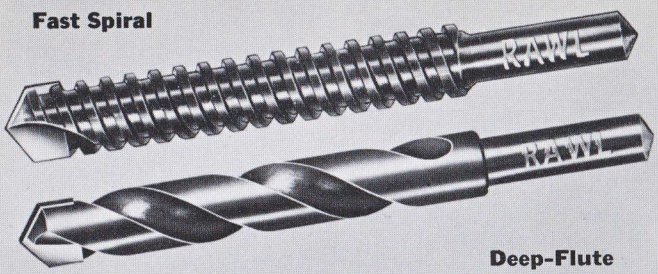
Catalog Number	Diameter and Length Overall	Drilling Depth	Catalog Number	Diameter and Length Overall	Drilling Depth
8400	3/8" x 9"	4"	8420	*1 1/8" x 12"	7"
8404	1/2" x 10"	4"	8422	*1 1/4" x 12"	7"
8408	5/8" x 12"	6"	8424	*1 3/8" x 12"	7"
8412	3/4" x 12"	6"	8426	*1 1/2" x 12"	7"
8414	7/8" x 12"	6"	8428	*1 5/8" x 12"	7"
8416	1" x 12"	7"			

*These diameters available on special order. 18" and 24" lengths also available.



All Rawl percussion drills are three-pointed for easy resharpening. Four point drills have eight angles that must be ground in sharpening—Rawldrills have only three flat surfaces to grind, and can quickly and easily be sharpened on a grinding wheel by someone with no previous experience.

Each M/T and R/T Rawldrill is a constant diameter and is fluted all the way from tip to shank—they can be sharpened again and again and still maintain original diameter.



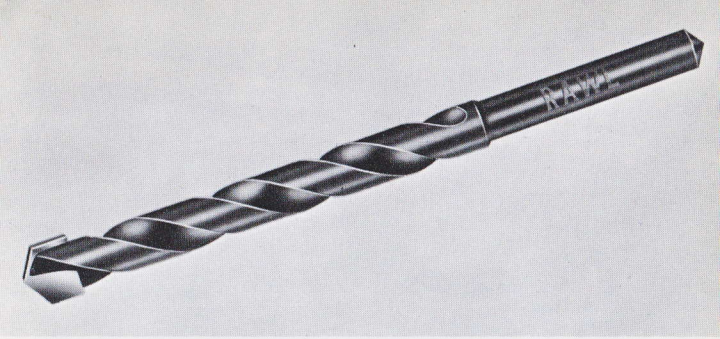
Rawl Spiral Carbide Drills

The Rawl spiral carbide-tipped rotary drill for masonry has been designed by Rawl engineers to give the best combination of strength and drilling speed for every material. The brazed-in carbide tip has maximum amount of support against shock, while the spiral fluting is designed to clear cuttings as rapidly as possible. Available in either the Fast Spiral or Deep-Flute styles.

Cat.No. (Fast Spiral)	Cat.No. *(Deep Flute)	Nominal Diam.	Actual Diam. Inches (Fast)	Actual Diam. Inches (Deep Fl.)	Length Overall (Fast Spiral)	Length Overall (Deep Flute)	Shank Diam.	Packed in B'xes of
8500	8600	1/8"	.130	.132	2 1/2"	2 1/2"	1/8"	12
8502	8602	5/32" (# 6)	.152	.154	3"	2 5/8"	5/32"	12
8504	8604	11/64" (# 8)	.182	.184	3"	3 1/8"	11/64"	12
8506	8606	3/16" (#10)	.198	.207	3"	3 1/4"	3/16"	12
8508	8608	1/4" (#12)	.260	.257	4"	3 3/8"	1/4"	12
8510	8610	9/32" (#14)	.281	.288	4"	3 1/2"	1/4"	12
8512	8612	5/16" (#16)	.328	.322	4"	3 7/8"	1/4"	12
8514	8614	3/8" (#20)	.390	.385	4"	4 1/8"	1/4"	12
8516	8616	7/16"	.458	.458	6"	6"	3/8"	6
8520	8620	1/2"	.525	.525	6"	6"	3/8"	6
8522	8622	1/2"	.525	.525	6"	6"	1/4"	6
8524	8624	9/16"	.587	.587	6"	6"	7/16"	6
8526	8626	5/8"	.650	.650	6"	6"	1/2"	6
8528	8628	11/16"	.713	.713	6"	6"	1/2"	6
8530	8630	3/4"	.775	.775	6"	6"	1/2"	6
8532	8632	7/8"	.905	.905	6"	6"	1/2"	6
8534	8634	1"	1.030	1.030	6"	6"	1/2"	1
8536	8636	1 1/8"	1.160	1.160	6"	6"	1/2"	1
8538	8638	1 1/4"	1.285	1.285	10"	10"	1/2"	1
8540	8640	1 3/8"	1.410	1.410	10"	10"	1/2"	1
8542	8642	1 1/2"	1.535	1.535	10"	10"	1/2"	1

DEEP FLUTE CARBIDE DRILLS

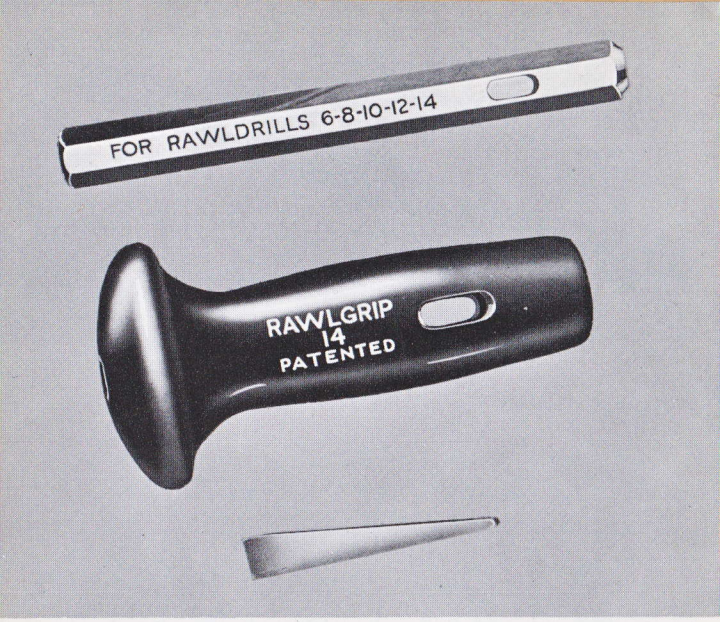
*Deep-Flute Carbide Drills in diameters 7/16" and larger available on special order from factory.



RAWL EXTRA LENGTH CARBIDE DRILLS

Rawl Spiral Carbide Tipped Drills are also available for deep or through holes in the following extra lengths:

Catalog Number	Nominal Diam. & Length	Actual Diam. (in.)	Shank Diam.	Packed in Boxes of
8650	3/16" x 8"	.198	3/16"	1
8652	1/4" x 6"	.260	1/4"	1
8653	1/4" x 12"	.260	1/4"	1
8654	1/4" x 18"	.260	1/4"	1
8656	5/16" x 6"	.328	1/4"	1
8657	5/16" x 12"	.328	1/4"	1
8658	5/16" x 18"	.328	1/4"	1
8660	3/8" x 6"	.390	1/4"	1
8661	3/8" x 12"	.390	1/4"	1
8662	3/8" x 18"	.390	1/4"	1
8664	7/16" x 12"	.458	3/8"	1
8665	7/16" x 18"	.458	3/8"	1
8666	1/2" x 12"	.525	3/8"	1
8667	1/2" x 18"	.525	3/8"	1
8668	9/16" x 12"	.587	7/16"	1
8669	9/16" x 18"	.587	7/16"	1
8670	5/8" x 12"	.650	1/2"	1
8671	5/8" x 18"	.650	1/2"	1
8673	3/4" x 12"	.775	1/2"	1
8674	3/4" x 18"	.775	1/2"	1
8676	7/8" x 12"	.905	1/2"	1
8677	7/8" x 18"	.905	1/2"	1
8679	1" x 12"	1.030	1/2"	1
8680	1" x 18"	1.030	1/2"	1
8682	1 1/8" x 12"	1.160	1/2"	1
8683	1 1/8" x 18"	1.160	1/2"	1
8684	1 1/4" x 18"	1.285	1/2"	1
8685	1 3/8" x 18"	1.410	1/2"	1
8686	1 1/2" x 18"	1.535	1/2"	1



RAWLDRILL ACCESSORIES

For Hand Drilling

#8701 Drill Holder for hand drilling, with #14 Rawldrill Taper. Accepts #6 (5/32″) to #14 (9/32″) M/T or R/T Rawldrills.

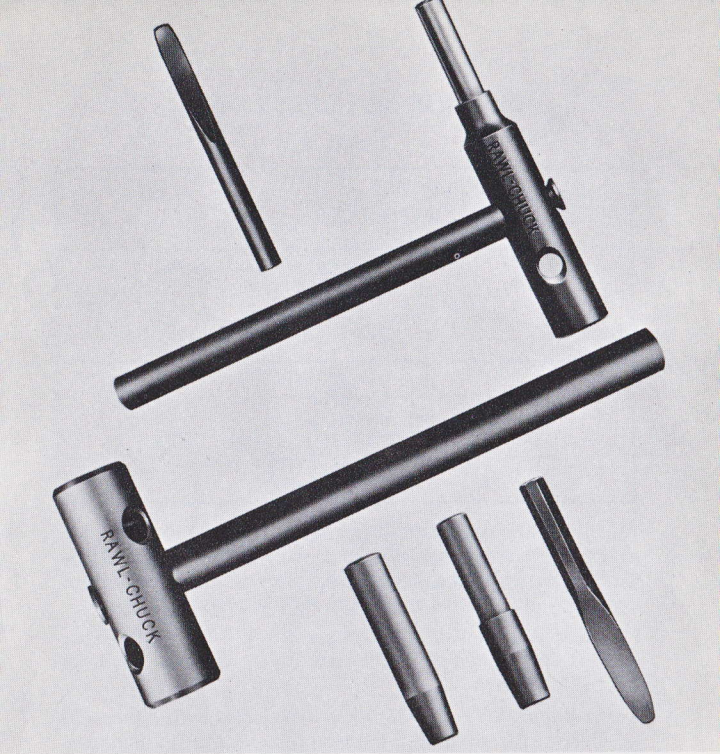
#8702 Drill Holder for hand drilling, with #20 Rawldrill Taper. Accepts #16 (5/16″) to 3/4″ M/T or R/T Rawldrills.

#8703 Rawl Grip fits #8701, #14 Taper Rawl Drill Holder. Protects the hands, makes hand drilling more comfortable.

#8704 Rawl Grip fits #8702, #20 Taper Rawl Drill Holder.

#8705 Drill Holder Ejector Pin removes Rawldrills from Holders. One included free with each Drill Holder.

When assembling Drill Holder and Grip, make certain that *ejector slots of both parts line up.* Rawl Drill Holders may be replaced in Rawl Grips without the necessity of buying a complete new assembly. To replace, hammer the Drill Holder free of the Grip by striking the bore end with unhardened steel pin (as a nail). Then insert new Holder in the regular manner.



RAWLDRILL ACCESSORIES

For Power Drilling

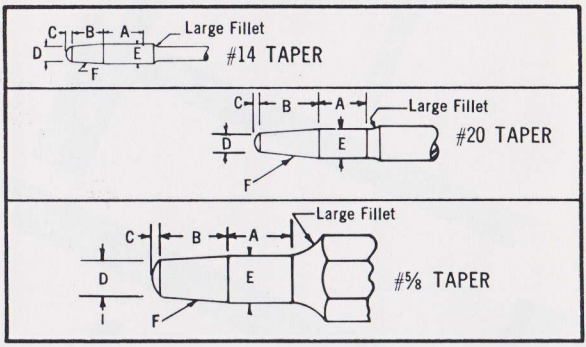
Rawl Chucks adapt Rawldrills to the power hammers of every manufacturer. Packed with each Rawl Chuck is a handle for rotating, a tubular rubber covering for this handle, and a Rawldrill ejector pin.

The shank pin of a Rawl Chuck is machined to fit the barrel of the power hammer, while the tapered hole in the chuck body corresponds to the #14, #20 or #5/8 Taper of a Rawldrill. Holes are drilled in the chuck body to accept the handle and ejector pin.

It is important to know the difference in tapers of Rawldrills, so that you will order the correct chuck taper for the size drill to be used. On the following page is a description and diagram showing the three different Rawldrill tapers available. Consult this to be certain you order the correct taper Rawl Chuck.

Rawldrill and Chuck Data

Table I



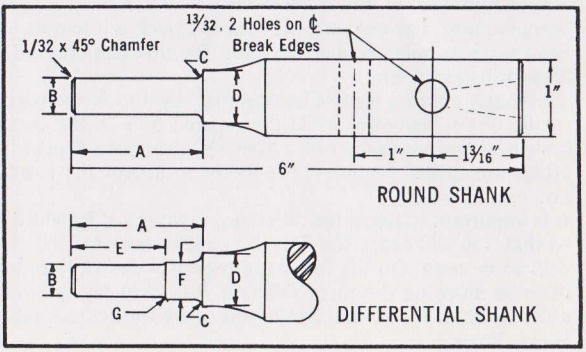
Rawldrills are made with three sizes of shanks, proportionate to the diameters of the drills, to provide the best possible balance between size of shank and diameter of fluting, to prevent breakage and provide maximum usable length of flute.

M/T and R/T Rawldrills are made with #14 Rawldrill Taper in sizes #6 through #14. They are made with #20 Taper in sizes #16 through ¾″.

Taper Shank (T/S) Rawldrills are available with either #20 or #⅝ Taper from the ⅜″ diameter through the ⅞″ diameter. From 1″ to 1⅝″ they are made with #⅝ Taper only.

Be sure that the Rawl Drill Holder or Chuck that you order has the *proper size of Taper* for the drill sizes you will be using.

Table II



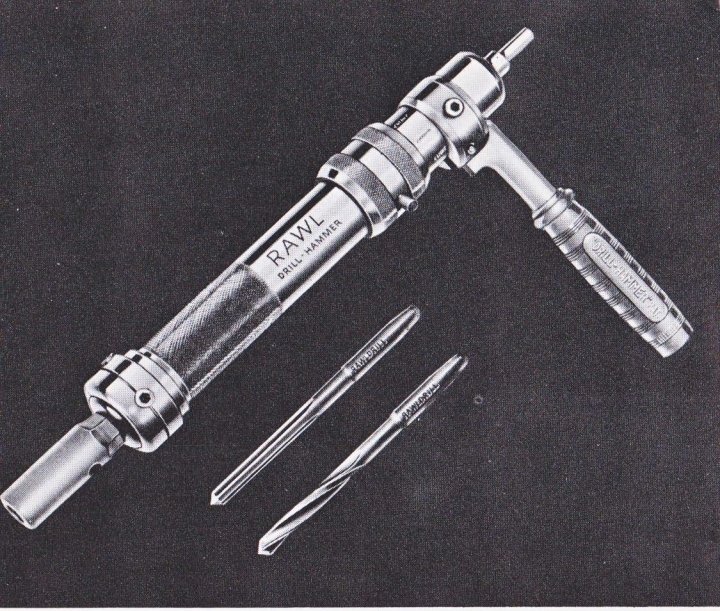
Rawldrill Shank Dimensions, Table I

Rawldrill Taper	A	B	C	D	E	F
#14	19/32"	13/32"	3/32"	.217	.279	8°52′ Incl.
#20	15/32"	25/32"	1/8"	.265	.374	8°02′ Incl.
#5/8	7/8"	7/8"	1/8"	.518	.625	6°52′ Incl.

Rawl Chuck Shank Dimensions, Table II

Make and Model No. of Hammer	A	B	C	D	E	F	G
Black and Decker 102, 103	2 1/4"	.401 .399	3/32"	5/8"			
Black and Decker 104, 105 (Type C)	2 1/2"	.588 .580	1/16"	13/16"	1 7/8"	.681 .678	1/16"
Chicago Pneumatic CP-9	3 3/4"	.751 .749	1/8"				
Chicago Pneumatic CP-14	3 1/4"	.751 .745	1/4"	1 1/8"			
Ingersoll Rand H54U	1 3/4"	.432 .429	3/32"	11/16"	1 1/4"	.496 .493	1/16"
Kango G	2 3/4"	.496 .493	1/8"	11/16"			
Kango E, F	3/4"	.623 .620	1/8"	3/4"			
Millers Falls 1558	2"	.496 .492	1/16"	5/8"			
Millers Falls 1716, 2516, 3216	2 3/4"	.684 .674	3/32"	7/8"			
Milwaukee H834	1 1/4"	.403 .400	1/16"				
Milwaukee H856	1 1/2"	.497 .494	3/32"	7/8"	1 1/8"	.558 .554	3/32"
Skil 726	2 1/8"	.432 .429	1/16"	13/16"	1 5/8"	.496 .493	3/32"
Skil 736	3 3/16"	.751 .749	1/8"	3/4"			
Syntron 10	2"	.496 .492	1/16"	5/8"			
Syntron 16, 22, 25	2 3/4"	.684 .674	3/32"	7/8"			
Thor U-100	1 3/4"	.497 .494	1/16"	11/16"			
Pneumatic Hammer Round Barrel	2 3/8"	.681 .678	3/32"	13/16"			

Note: Van Dorn Hammer has same model number and dimensions as Black and Decker.



Rawl Drill-Hammer

The Rawl Drill-Hammer is a unique attachment that converts a ¼″ high-speed drill from a rotary drill to a power hammer . . . quickly, and easily. Use reliable, inexpensive Rawldrills with your ¼″ electric drill. A Rawl Drill-Hammer pays for itself in drill and labor savings in no time. Catalog #8760.

Use with ¼″ capacity high speed drill—1500 to 2500 RPM's.

Specifications

Weight—only 2¾ pounds.

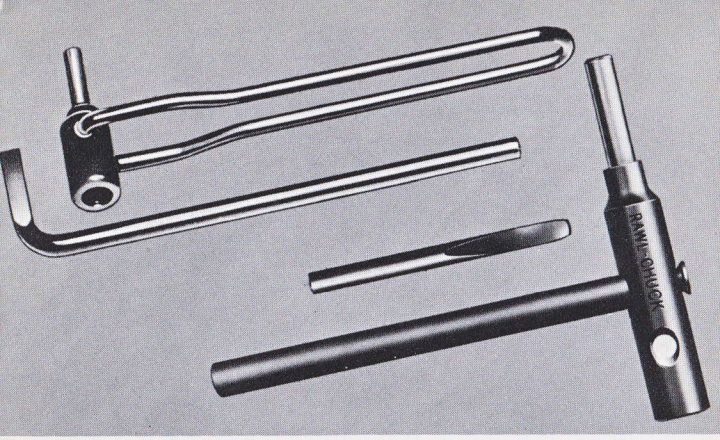
Weight of blow—adjustable to "light," "medium" or "heavy."

Construction—only three moving parts all of hardened steel. Designed to withstand the most severe treatment.

Handle—rubber covered for effective grip. Folds flat along the hammer barrel when not in use.

Lubrication—is obtained through a standard pressure fitting on barrel. Requires temperature resistant grease such as Socony Mobiltemp #1.

Capacity—Rawl #14 adapter for No. 6 (5/32″) to No. 14 (9/32″) Rawldrills (M/T or R/T). Rawl #20 adapter for No. 16 (5/16″) to No. 20 (3/8″) Rawldrills (M/T or R/T).

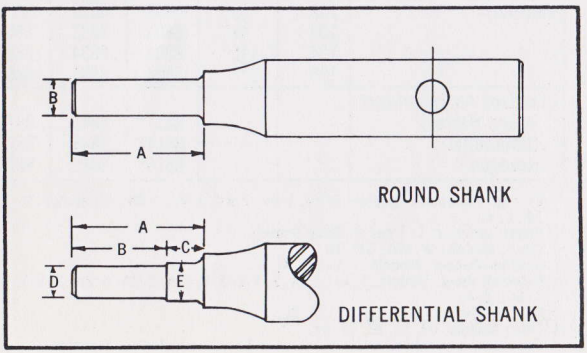


Chuck Ordering Information for Rawldrill and Saber-Tooth Chucks

Please order chucks by catalog number. For Rawldrill Chucks specify taper desired. For Rawl Saber-Tooth Chucks specify size of Saber-Tooth anchor to be used.

If ordering chucks to install Stud Type Saber-Tooth, please so indicate on your order.

To order either Rawldrill or Saber-Tooth Chucks for hammers not shown on the next two pages, please give the following information if available: the size of hammer and manufacturer and the catalog or model number. If this information is unavailable, please give all dimensions as indicated in the following diagram.



Rawldrill Chuck Catalog Numbers

Hammer	Model No.	Rated Capacity	Cat. No. 14 Taper	Cat. No. 20 Taper	Cat. No. 5/8 Taper
Black & Decker	102	1/2"	8803	8833	8864
	103	3/4"	8803	8833	8864
	104	1 1/8"	8804	8834	8865
	105	2"	8824	8854	8885
Chicago Pneumatic	840	3/4"	8805	8835	8866
	930	1 1/8"	8813	8843	8874
	CP-9	1 1/4"	8817	8847	8878
	CP-14	1 1/2"	8818	8848	8879
Ingersoll Rand	H54U	1 1/8"	8816	8846	8877
Kango	E	3"	8819	8849	8880
	F	2"	8819	8849	8880
	G	3/4"	8821	8851	8882
Millers Falls	1558	5/8"	8801	8831	8862
	1716	1 1/8"	8800	8830	8861
	2516	1 1/2"	8800	8830	8861
	3216	2"	8800	8830	8861
Milwaukee	H834	3/4"	8806	8836	8867
	H856	3/4"	8806	8836	8867
Phillips	K454	1 1/8"	8822	8852	8883
	K457	1 1/8"	8822	8852	8883
Skil	726	1"	8808	8838	8869
	736	2"	8809	8839	8870
Stanley	309	1 1/8"	8805	8835	8866
Syntron	10	5/8"	8801	8831	8862
	16	1 1/8"	8800	8830	8861
	22	1 1/2"	8800	8830	8861
	25	2"	8800	8830	8861
Thor	U-100	1 1/8"	8805	8835	8866
Van Dorn	102	1/2"	8803	8833	8864
	103	3/4"	8803	8833	8864
	104	1 1/8"	8804	8834	8865
	105	2"	8804	8834	8865
Standard Air Hammers†					
Round Barrel			8813*	8843	8874
Differential			8814*	8844	8875
Hexagon			8815*	8845	8876

† Chicago Pneumatic Models: 0-RV, 1-RV, 2-RV, 3-RV, 4-RV; Simplates: 0, 1, 2, 2A, 3, 4.
† Boyer Superior: 1, 2 and 3; Baby Superior.
† Cleco, Models: W, WA, OW-BD.
† Gardner-Denver, Models: 1-X, 2, 2-X, 3.
† Ingersoll Rand, Models: 1, E-1, S-1, 2, E-2, S-2, 2-A, E-2A, S-2A, 3, E-3, S-3, 4, E-4, S-4.
† Master Pneumatic, Models: 1, 2E, 3E, 4.
† Thor, Models: 00, 11, 22, 33, 44.
* Spaces so marked indicate hammer is not recommended for this size.

Rawl Saber-Tooth Chuck Catalog Numbers

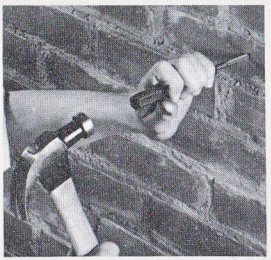
Hammer	Model No.	Rated Capacity	Cat. No. 3/16" 1/4"	Cat. No. 5/16"	Cat. No. 3/8"	Cat. No. 1/2"	Cat. No. 5/8"	Cat. No. 3/4"	Cat. No. 7/8"
Black & Decker	102	1/2"	6510	6511	6512	6513	*	*	*
	103	3/4"	6510	6511	6512	6513	6514	*	*
	104	1 1/8"	6520	6521	6522	6523	6524	6525	6526
	105	2"	*	*	6532	6533	6534	6535	6536
Chicago Pneumatic	840	3/4"	6540	6541	6542	6543	6544	*	*
	930	1 1/8"	6550	6551	6552	6553	6554	6555	6556
	CP-9	1 1/4"	6600	6601	6602	6603	6604	6605	6606
	CP-14	1 1/2"	6780	6781	6782	6783	6784	6785	6786
Ingersoll Rand	H54U	1 1/8"	6560	6561	6562	6563	6564	6565	6566
Kango	E	3"	*	*	6572	6573	6574	6575	6576
	F	2"	*	*	6572	6573	6574	6575	6576
	G	3/4"	6580	6581	6582	6583	6584	*	*
Millers Falls	1558	5/8"	6660	6661	6662	6663	6664	*	*
	1716	1 1/8"	6590	6591	6592	6593	6594	6595	6596
	2516	1 1/2"	6590	6591	6592	6593	6594	6595	6596
	3216	2"	*	*	6592	6593	6594	6595	6596
Milwaukee	H834	3/4"	6620	6621	6622	6623	6624	*	*
	H856	3/4"	6620	6621	6622	6623	6624	*	*
Phillips	K454	1 1/8"	6630	6631	6632	6633	6634	6635	6636
	K457	1 1/8"	6630	6631	6632	6633	6634	6635	6636
Skil	726	1"	6670	6671	6672	6673	6674	6675	6676
	736	2"	6680	6681	6682	6683	6684	6685	6686
Stanley	309	1 1/8"	6540	6541	6542	6543	6544	6545	6546
Syntron	10	5/8"	6660	6661	6662	6663	6664	*	*
	16	1 1/8"	6590	6591	6592	6593	6594	6595	6596
	22	1 1/2"	6590	6591	6592	6593	6594	6595	6596
	25	2"	*	*	6592	6593	6594	6595	6596
Thor	U-100	1 1/8"	6540	6541	6542	6543	6544	6545	6546
Van Dorn	102	1/2"	6510	6511	6512	6513	6514	*	*
	103	3/4"	6510	6511	6512	6513	6514	*	*
	104	1 1/8"	6520	6521	6522	6523	6524	6525	6526
	105	2"	*	*	6532	6533	6534	6535	6536
Standard Air Hammers†									
Round Barrel			6550	6551	6552	6553	6554	6555	6556
Differential			6900	6901	6902	6903	6904	6905	6906
Hexagon			6910	6911	6912	6913	6914	6915	6916

† Chicago Pneumatic Models: 0-RV, 1-RV, 2-RV, 3-RV, 4-RV; Simplates: 0, 1, 2, 2A, 3, 4.
† Boyer Superior: 1, 2 and 3; Baby Superior.
† Cleco, Models: W, WA, OW-BD.
† Gardner-Denver, Models: 1-X, 2, 2-X, 3.
† Ingersoll Rand, Models: 1, E-1, S-1, 2, E-2, S-2, 2-A, E-2A, S-2A, 3, E-3, S-3, 4, E-4, S-4.
† Master Pneumatic, Models: 1, 2E, 3E, 4.
† Thor, Models: 00, 11, 22, 33, 44.
* Spaces so marked indicate hammer is not recommended for this size.

Notes on Drilling in Masonry

PERCUSSION DRILLING

The duller a drill becomes, the more difficult the drilling operation becomes—a sharp drill saves its user. After the cutting edges of a drill become dull, the outside diameter begins to wear down, resulting in undersized holes. *Keep drills sharp.*



When drilling by hand, "jump" the drill in the hole (lift the drill slightly off the bottom of the hole—the tendency is to push it into the hole while hitting with the hammer).

Keep drill perpendicular to masonry at all times, and keep rotating it to prevent locking in the hole.

Avoid using a hammer too heavy for a small diameter drill or one too light for a larger drill.

ROTARY DRILLING

As a general rule when using a carbide-tipped rotary masonry drill it is best to use a *slow drilling speed and maximum pressure.* High speeds will "burn" the drill, while light pressure allows the point to "ride" on the bottom of the hole instead of cutting.

Like all masonry drills, these must be kept sharp for efficient performance. See instructions on container for resharpening these drills.

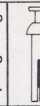
Don't allow the drill to overheat—back it out of the hole occasionally to allow it to cool and to clear cuttings, but *keep the drill turning at full speed while backing out.*

In extra hard material use slower speed, most pressure and a coolant if possible. Keep drill tip constantly wet.

Keep an M/T or R/T percussion Rawldrill handy to fracture a piece of hard aggregate on which the carbide drill might otherwise "ride". A few hard raps with a hammer and percussion drill will effectively break up a piece of aggregate and allow the rotary carbide drill to go through easily.

RAWL PRODUCTS

The following list indicates adaptability of the different types of Rawl masonry anchors for the materials shown.

RAWL PRODUCT	Rawlplug	Rawl Saber-Tooth	Rawl Multi-Calk	Rawl Calk-In	Rawl-Drive	Rawl Hammer-Set	Rawl Scru-Lead	Rawl Lag-Shield	Rawl Spring-Wing	 Rawl Nailin Anchor
Brick	●	●	●	●	●	●	●	●		●
Concrete	●	●	●	●	●	●	●	●		●
Concrete Block	●					●	●		●	●
Cinder Block	●					●	●		●	
Stone	●	●	●	●	●	●	●	●		●
Marble	●			●		●	●			●
Building Tile	●					●	●		●	
Ceramic Tile	●					●	●		●	
Terrazzo	●	●		●		●	●			●
Terra Cotta	●						●		●	
Plaster & Sheet Rock	●								●	
Slate	●					●	●		●	
Glass	●								●	
Stucco	●						●			

RAWL PRODUCTS

Typical applications for masonry anchors and Rawl products most often used for these applications.

	Rawlplug	Saber-Tooth	Multi-Calk	Calk-In	Rawl-Drive	Hammer-Set	Scru-Lead	Lag-Shield	Spring-Wing	Nailin Anchor
Acoustical Ceilings	●	●		●	●	●				
Awnings	●	●		●	●	●	●	●	●	●
Bathroom Fixtures	●	●				●	●	●	●	
Benches (Gym)	●	●	●	●	●	●		●	●	
Blowers	●	●	●	●	●	●	●	●	●	
Brackets	●	●		●	●	●	●	●	●	
Burglar Alarms	●	●	●	●	●	●	●	●	●	●
Cabinets	●	●	●	●	●	●	●	●	●	●
Carpet Tacking	●				●					●
Conveyor Equipment	●	●	●	●	●	●				
Conduit Clamps	●	●		●	●	●	●	●	●	●
Curtain Fixtures	●						●		●	
Door Bucks	●	●			●					
Doors, Folding	●			●		●	●		●	
Drapery Hardware	●						●		●	
Electric Meters	●	●		●	●	●	●	●	●	
Elevator Equipment	●	●	●		●	●				
Fixtures, Office	●	●	●	●	●	●	●	●	●	●
Furring Strips	●			●	●	●				●
Lockers	●	●	●	●	●	●		●		
Machinery	●	●	●	●	●	●		●		
Metal Lath	●	●			●					
Office Machines	●	●		●	●		●			
Ornamental Iron	●	●	●	●	●	●	●	●	●	
Outlet Boxes	●	●		●	●		●		●	
Partitions	●	●			●	●				
Pipe Strap	●	●		●	●	●	●		●	●
Pipe Railings	●	●	●	●	●	●				
Plaster Ends	●	●			●					
Plumbing Fixtures	●	●	●	●	●	●	●	●	●	●
Radiators	●	●		●		●	●	●	●	●
Saddles, Door	●	●			●		●			
Seating, Institutional	●	●	●	●	●	●				
Sheet Metal Ducts	●	●			●					
Signs	●	●	●	●	●	●		●	●	●
Stair Treads	●									
Stairs, Iron	●	●	●	●	●	●				
Store Fronts	●	●	●	●	●	●	●	●	●	●
Towel Cabinets	●	●		●		●	●		●	●
Vending Machines	●	●		●		●	●		●	●
Venetian Blinds	●						●		●	

Holding powers shown represent averages of extensive tests in good masonry materials performed under ideal conditions. A safety factor ratio should be applied to these figures.

All RAWL products are completely guaranteed against manufacturing defect. Should any RAWL product prove to be defective from the time of its manufacture, it will be replaced or repaired free of any charge.

Branches of the Rawlplug Company are located in each of the cities shown below, and are in a position to provide your distributor with local stock, service and advice. America's finest distributors stock and sell RAWL products, and have been trained in their use.

Specify "RAWL" when ordering anchoring devices or drills to be sure of obtaining the highest quality products made for the purpose of drilling in or fastening to masonry.

THE RAWLPLUG COMPANY, INC.

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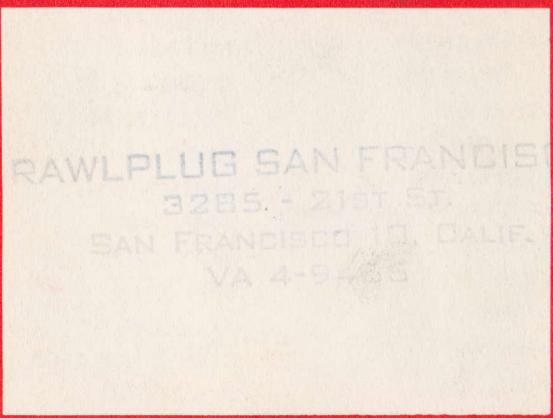
RAWL products are stocked and sold by America's finest distributors

Your local distributor has been trained by The Rawlplug Company in the use of masonry anchors and drills for all applications. He can advise you on your application and provide you with the material you need to do your job, when you need it.

SEE YOUR DISTRIBUTOR FOR LOCAL STOCK AND SERVICE



The Rawlplug Company, Inc.
NEW ROCHELLE, NEW YORK

Form No. 462